661177

hitchcock's

WOOD WORKING

digest

JULY, 1957

In This Issue

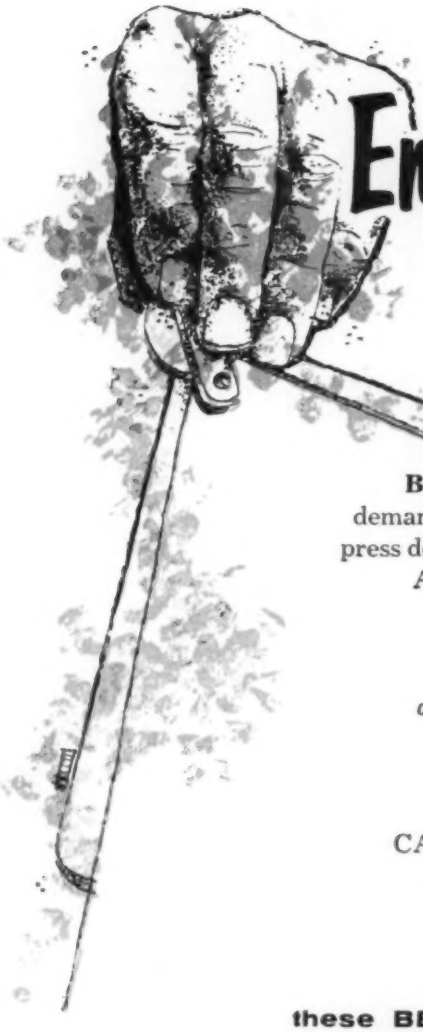
- American Woods . . . Availability and Utilization of Northeastern Red Oak
- Efficient Cabinet Making on the West Coast
- Why Use Carbides?
- Hand Sanding Techniques
- Manufacturing Operations at the Kroehler Company
- Glued Laminated Trusses Save Construction Costs
- Types of Plywood Cores

THE NUMBER ONE PUBLICATION FOR THE ENTIRE WOODWORKING INDUSTRY

BERTHELSEN

Engineering Know-how

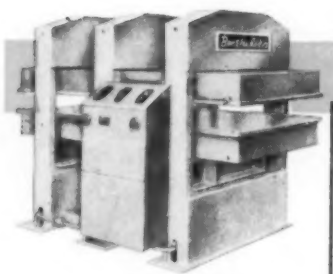
sets the pace in precision press construction!



Berthelsen presses are built to meet today's ever-increasing demands for better products at less cost. Years of experience in press design and manufacture for a wide range of applications in the Aircraft, Building, Furniture, Plywood and other industries qualifies Berthelsen Engineers as the *first* source for solving all laminating, bonding and veneering problems. Shown below are just a few Berthelsen "firsts" . . . *all major design and engineering advancements* in hot press construction that have helped all plants — large and small — to benefit from the time and cost-saving advantages of modern Berthelsen equipment.

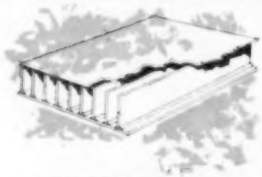
CALL OR WRITE TODAY! There's no obligation when you let Berthelsen Engineers review your "pressing" problems.

these BERTHELSEN ENGINEERING ADVANCEMENTS are cutting costs . . . improving quality . . . in plants all over the world!



SINGLE OPENING HOT PRESS

Berthelsen introduced new economy to manufacturers of veneers and plywoods with the single opening automatic hydraulic Hot Press. In addition to close quality control, it made possible both mass and short-run production — handling a wide variety of laminating jobs.



CHAMBERED PLATEN

The patented Berthelsen Chambered Platen permits unrestricted flow of steam, and yields uniform platen temperature over the entire pressing area. It is the only platen designed to serve a structural as well as thermal function — essential for pressing fibre or particle board products.

COORDINATED SIDE PRESSURE ATTACHMENTS

Berthelsen introduced new quality standards with this engineering advancement. Application of side pressure in sequence with face pressure makes possible edge gluing and face veneering of furniture panels or slab doors—ALL IN ONE OPERATION!

INTEGRAL LOADING TABLES

Berthelsen introduced new efficiency in labor utilization and greater production per platen opening with this design advancement. The tables quickly discharge and position new load after every curing cycle—avoids handling of hot cauls—keeps production HIGH!

BERTHELSEN PRESSES

P. O. BOX 1423 • LOCKPORT ROAD • JOLIET, ILLINOIS

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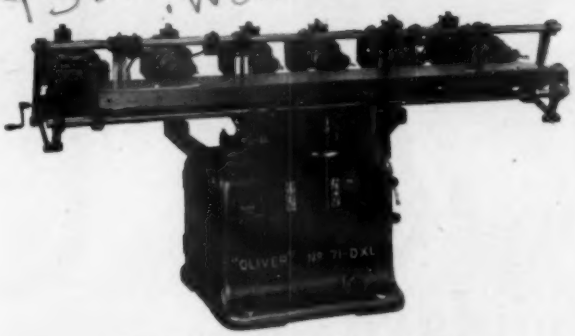
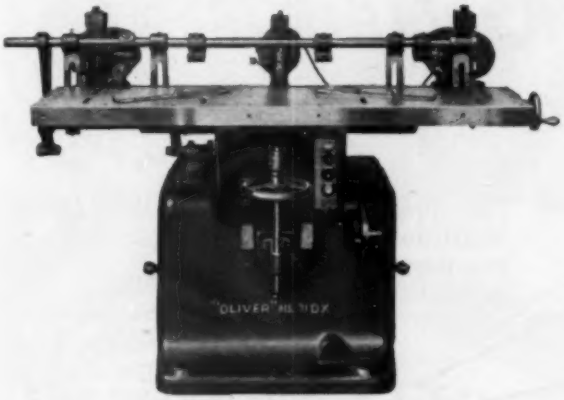


No. 71-DXL Automatic Borer has capacity between centers of 7/8" to 72". Carries up to 6 boring heads—8 to 22 strokes a minute.

No. 71-D Automatic Borer has capacity between centers of 7/8" to 42". Carries up to 4 boring heads—8 to 22 strokes a minute.

No. 81-D Automatic Borer for close-center work. A 2-spindle head bores holes from 7/8" to 3½" or 6" centers—8 to 22 strokes a minute.



No. 71-DX Automatic Borer has capacity between centers of 7/8" to 48". Carries up to 6 boring heads—8 to 22 strokes a minute.

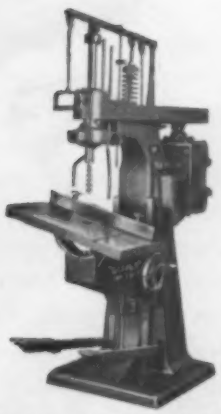
No. 82-D Borer can be fitted with 2-spindle adjustable head to bore 2 holes from 7/8" to 3½" or 6" between centers in any position.

OLIVER Borers meet almost every need for fast, smooth work

For end, edge or face work, there is a wide range of Oliver Borers to meet your special needs. The automatic Borers give you constant feed stroke for spindle carriage. Set up time is reduced and production increased on both short and long runs. Oliver Borers give smooth, dependable action on all kinds of wood. Work is held securely and released instantly at the end of the cycle. They are available with heavy-duty mechanical or quick-acting air clamps. The fast, easy-operating Olivers will enable you to speed production schedules.

Oliver offers 27 boring machine motor heads each having from 1 to 4 spindles. These heads offer a wide range of adjustability and capacity to handle any type of dowel or screw hole boring operation. Oliver heads are accurately graduated to denote small movements exactly.

Let Oliver engineers recommend the Borer best-suited for your work . . . or write today for folders on the machines that interest you!

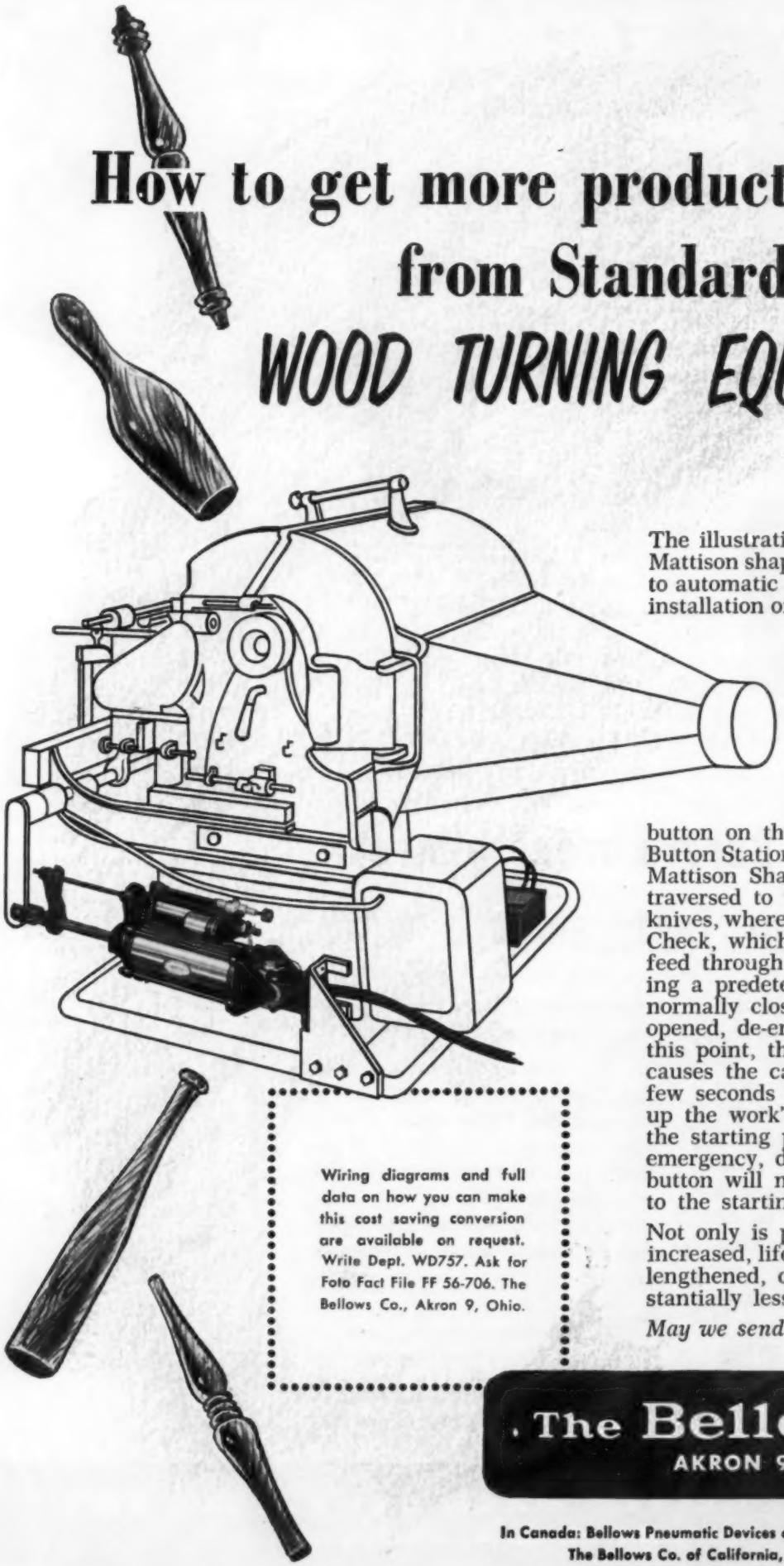


No. 73-T bores holes up to 3" diameter, 12" deep, to center of 36". Also offered with 2 independent spindles for boring holes of 2 sizes. Oliver also makes Vertical Borers of smaller capacity.

OLIVER
SINCE 1890

OLIVER MACHINERY COMPANY
Grand Rapids 4, Michigan

How to get more production from Standard WOOD TURNING EQUIPMENT



The illustration shows a standard Mattison shaping lathe converted to automatic operation by the installation of a Bellows Air Motor, Hydro-Check and time control. Production gains reported by manufacturers who have made the conversion range up to 116%.

The operator loads the wood blank in the chuck and presses the "start" button on the Start and Stop Push Button Station. The carriage of the Mattison Shaping Lathe is rapid traversed to within ⅛" of the cutter knives, where it picks up the Hydro-Check, which accurately controls the feed through the knives. Upon reaching a predetermined depth, a normally closed Micro-Switch is opened, de-energizing both relays. At this point, the pneumatic timed relay causes the carriage to pause a few seconds to let the cutters "clean up the work" before returning to the starting position. In an emergency, depressing the "stop" button will make the carriage return to the starting position and stop.

Not only is production materially increased, life of cutter knives is lengthened, operator fatigue is substantially lessened.

May we send you details:

646-B

Wiring diagrams and full data on how you can make this cost saving conversion are available on request. Write Dept. WD757. Ask for Foto Fact File FF 56-706. The Bellows Co., Akron 9, Ohio.

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.....like butter!

You get "effortless cutting" with a PORTER HYDRACUT SAW

The Porter 43-20J Automatic Hydracut Saw with foot pedal control permits top production at lowest operator fatigue factor. Here's where the human efficiency element is held to the most desirable point for you—operator simply positions stock, presses the electrically operated foot control, and this heavy-duty Porter 43-20J performs with the smooth efficiency you'll find is always built into a Dividend Designed Porter saw. Automatically the hydraulically-operated carriage carries the saw blade through the cut . . . automatically it returns to position. Quick adjustment of stroke lengths and cutting speeds — from zero to 45 cuts a minute—allows cutting room production pin-pointed to your plant capacity.

For more complete specifications write for Porter Bulletin 43-20J.

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Your Best Buy in Mitre Saws is Tannewitz

Whatever the nature of your production may be, if it requires a mitre saw bench, Tannewitz can supply the one that best suits your requirements — accurate to the nth degree, convenient to operate and built like all Tannewitz machines to give a lifetime of fine service with little or no upkeep — product of *Sawing Machinery Specialists.* Write for bulletin covering the type you are interested in or consult us on any sawing problem.

The TANNEWITZ WORKS
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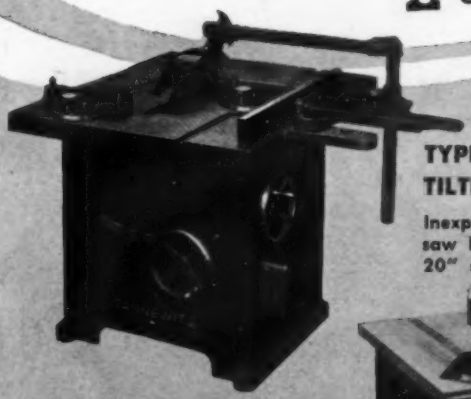
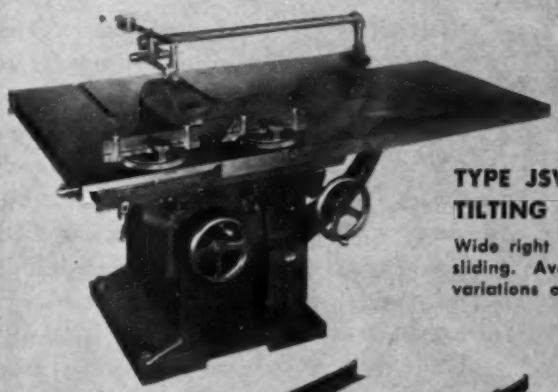
TYPE JDR WITH TILTING AND REVOLVING DOUBLE ARBOR

Carries one rip and one cut-off saw or other cutting heads. Instantly interchangeable.



TYPE U, TILTING ARBOR

Inexpensive, quality-built saw bench will take 20" saw.

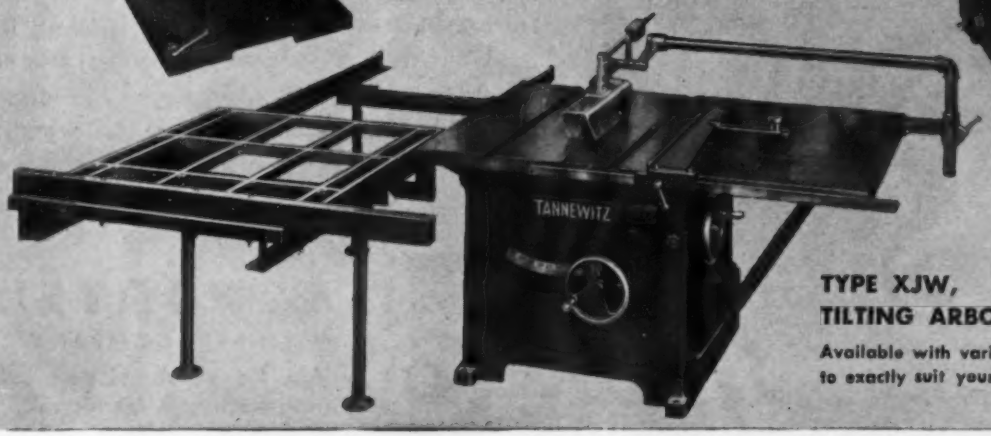


TYPE JSW-250, TILTING ARBOR

Wide right table, left table sliding. Available in several variations of tables.

TYPE SJ PORTABLE

Tilting arbor, takes 12" saw. Use it where needed.



TYPE XJW, TILTING ARBOR

Available with variation of 5 tables to exactly suit your production needs.

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Careful mixing of glue is all part of the Kroehler Manufacturing Company's efficient over-all program. For the complete story of furniture making at this company, see page 26.

hitchcock's WOOD WORKING digest

Vol. 59 **No. 7**

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MEMBER
BPA

Editor's Page 10
Letters to the Editor 12
Memo to Management 14
Why Use Carbides? 23
Furniture Making at Kroehler 26
Efficiency in Cabinet Production 33
Comes the Revolution 37

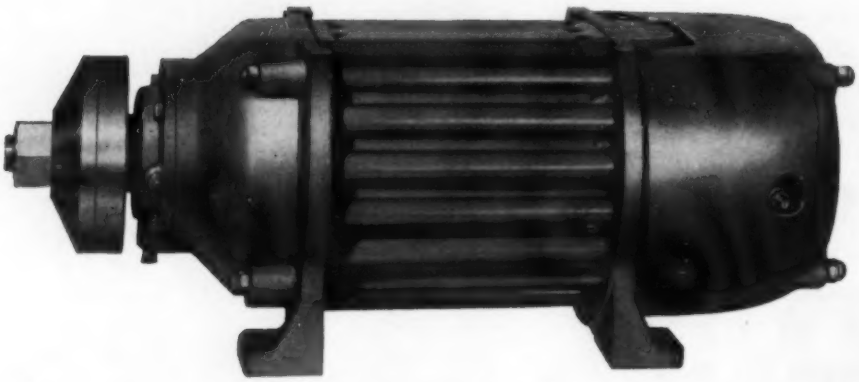
FINISHING SECTION 45
Hand Sanding For Detailed Work 47
Airless Spraying in Boat Making 56

PLYWOOD SECTION 63
Glued Wood Trusses 64
Core Stock for Plywood 69

Around the Shop 79
Right or Wrong 85
Available Literature 96
Equipment and Supplies 101
Men in the Industry 114
Indexes ..... See Inside Back Cover

Serving the Industry Since 1852

POSITIVE POWER with a WOODS MOTOR ARBOR®



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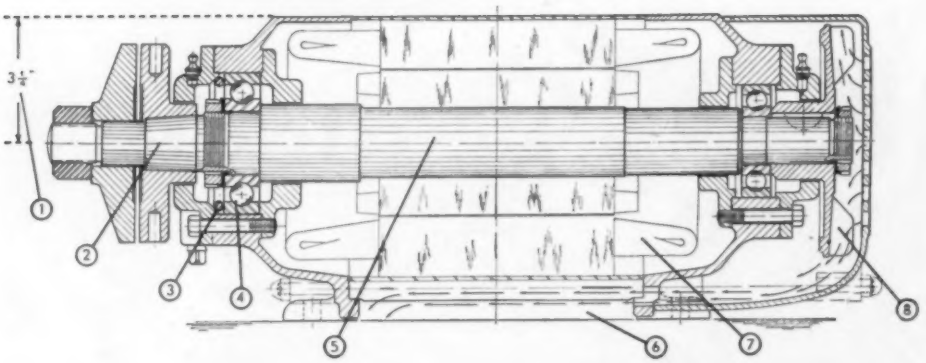
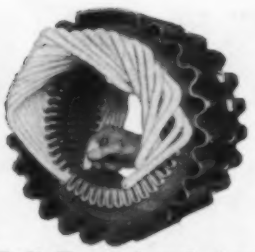
Dust-Proof





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1. 3¼ inches, centerline to flatted top or either side, up to 7½ horse-power.
2. Taper mounted saw-flange insures accuracy of face and is readily demountable for bearing inspection.
3. End-play of arbor prevented by annular spring-ring.
4. Abnormally large ball-bearings with ample lubrication for operation for extended periods without attention.
5. Shaft of extreme rigidity for stability and smoothness of operation.
6. Cooling air is directed over the OUTSIDE surfaces. No pockets to collect dust and restrict radiation.
7. Electrical design of a high order with high pull-out torque for heavy cuts.
8. Cast fan, securely driven by key and lock-nut.

Cut Operating and Maintenance Costs by Speeding the Work and Eliminating Loss of Production and Expensive Repairs of Belt-Driven Arbors. Write today for Descriptive Material.

MOTOR DIVISION

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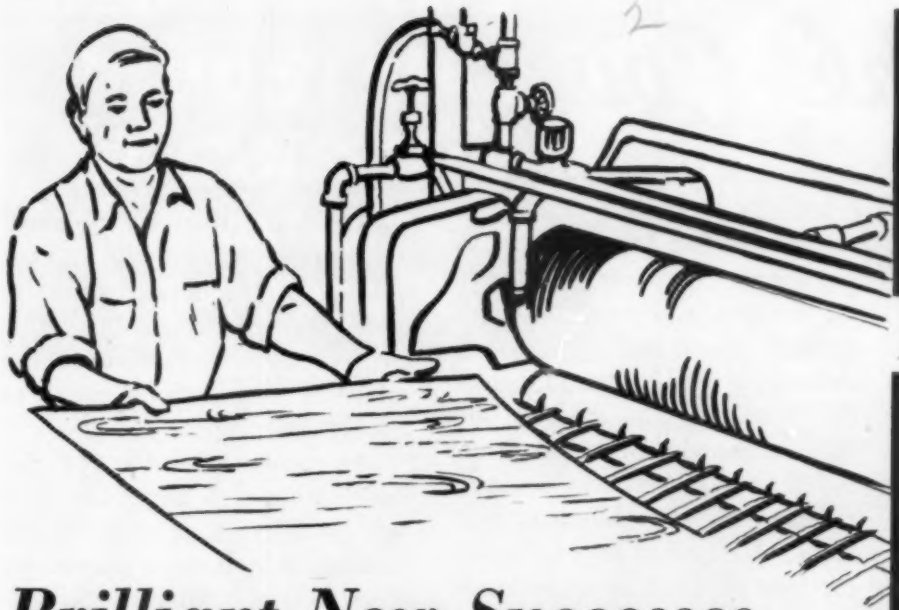
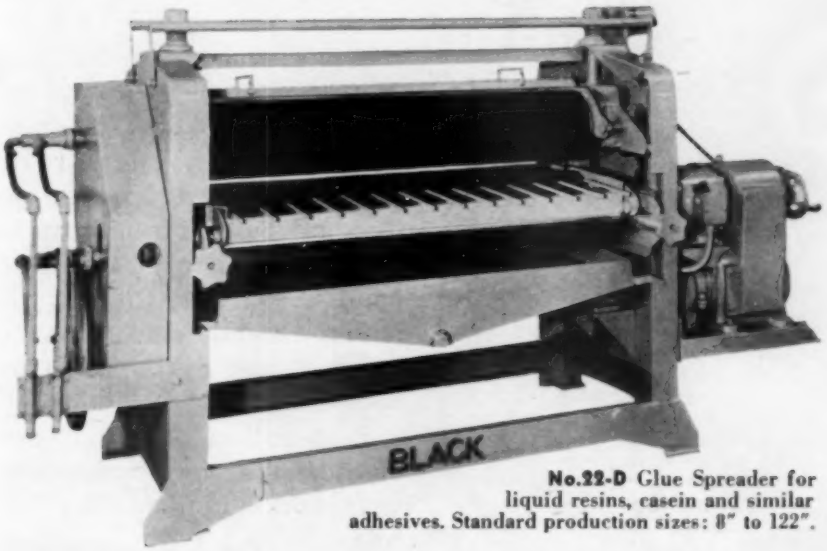


A West Coast manufacturer speeds production of hollow core flush doors with the No. 22-D, 50".

For glue testing and development work, a leading glue manufacturer depends on the No. 22-D Spreader.

Brilliant New Successes in Gluing and Laminating

Versatile No. 22-D Spreader helps produce laminated beams and roof trusses at a California mill.

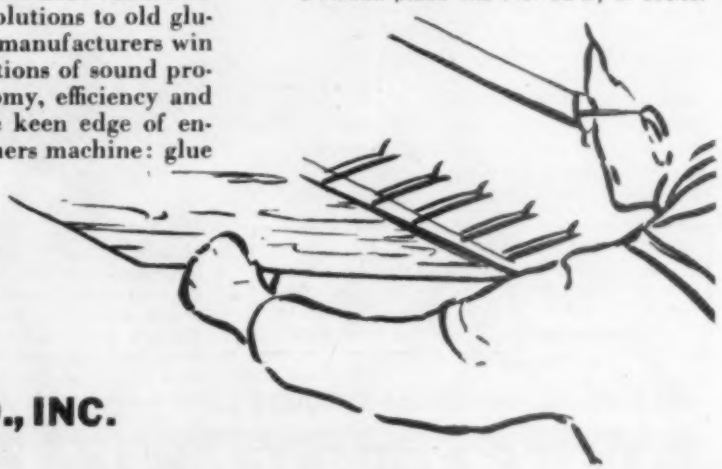


No.22-D Glue Spreader for liquid resins, casein and similar adhesives. Standard production sizes: 8" to 122".

Fast, economical production of plywood in a Finnish plant. The No. 22-D, of course.

On production lines, in glue rooms and laboratories . . . Black Brothers Gluing and Laminating Equipment provides new solutions to old gluing and laminating problems. Helps cost-conscious manufacturers win new competitive markets, too, through new applications of sound production techniques. Preferred for its proven economy, efficiency and speed, the versatile No. 22-D Spreader reflects the keen edge of engineering skill incorporated into every Black Brothers machine: glue spreader, mixer, press or clamp.

Shouldn't you consider a Black Brothers installation? Write for our Supplement to Bulletin No. 11-A which gives construction details and specifications on the No. 22-D Glue Spreader.



THE BLACK BROTHERS CO., INC.

MENDOTA 6, ILLINOIS

About the Cover

This month's cover picture shows a scene at the Capitol Desk Company of Los Angeles. This firm meets competition by using the finest woods and latest equipment.

The more expensive woods are easier to work with. Labor savings help make up the difference in price and the beauty of the wood increases sales. Latest equipment further reduces cost by saving labor and permitting use of relatively unskilled labor.

One of the labor savers, a pneumatic fastener, is shown on the cover. Forrest Harold, general manager of Capitol, describes the advantages of this tool. "At the end of one day, a man using this Spotnailer surpasses three days' production with hammer and nails." He added that virtually no special skill or experience is required to do the job with this air nailer, which is not true of hammer nailing. The problem of splitting and hammer marks is ended when the fasteners are air driven.

Another advantage of Spotnailing is the injuries saved. Hitting a finger with a hammer may be funny in the comic strips, but in the woodworking plant it is a serious cause of costly lost time.

As shown in the cover picture, special V-nose air guns are used to pin or staple inside corners which were previously very difficult to nail. A flat-end machine is used for flat surface fastening as described in the story on page 33. Because of the unique design of this unit, very little air is used to drive even a large pin or staple. Therefore a small compressor can handle several air guns. The staples, or pins, are driven three a second by simply pushing the button on the gun. Staples or pins up to 1½" long can be used. One hand is available to hold the material and quickly guide the nailer to the next spot to be fastened.

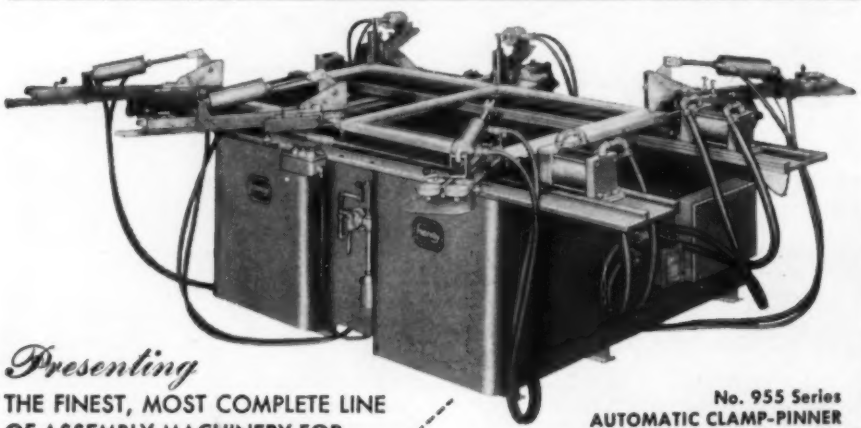
Push-button nailing is one of the latest developments in woodworking automation. We have heard from another source that they have gone a step further using "no hands" with a jig and a built-in Spotnailer and a foot pedal. What next?

In This Issue . . .

How far has the woodworking industry come in acceptance of carbides? Read Mr. Segal's evaluation on page 23.

Can you describe best utilizations for red oak? Read Mr. Nash's article on page 37.

When should hand sanding be used? Can troubles with "pitchy woods" be solved? Is airless spraying of finishes gaining in popularity? These are some of the features in the Finishing Section, page 45.

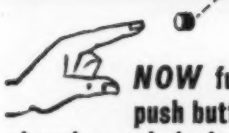


Presenting
THE FINEST, MOST COMPLETE LINE OF ASSEMBLY MACHINERY FOR . . .

SASH and DOORS

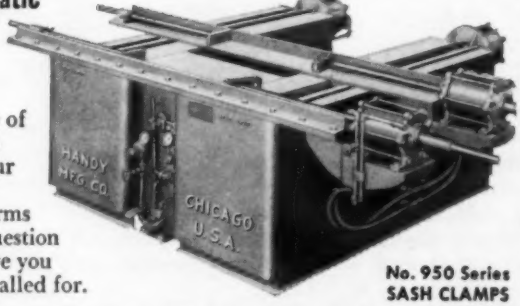
No. 955 Series
AUTOMATIC CLAMP-PINNER

Press the button — and before you can *think* Jack Robinson — the sash is clamped, squared and pinned. All you do is drop sash in and take them out; and you can't do it fast enough to keep up with the machine. Setup of clamp and Spotpinners is done simultaneously by power in seconds; so, for the first time, you actually get the full production potential every hour of the day. Just think how your costs will shrink!



NOW **fully automatic push button clamping and pinning**

There are times — and this is one of them — when something so much better comes along you realize your present equipment is obsolete. Handy assembly equipment performs so exceedingly well, it will be a question only of how few months it will save you back its moderate cost. Action is called for.



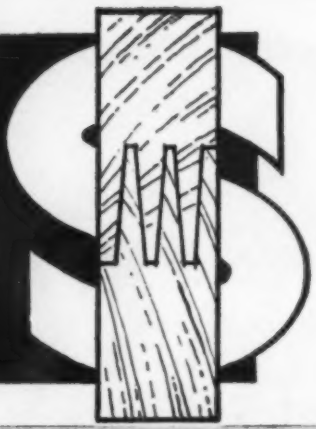
No. 950 Series
SASH CLAMPS

You can tell at a glance why these clamps greatly outperform even last year's model. The operators have no obstacles—the work is right below them for easy, fast reach. There's more power than you'll need, and it's applied just right in both directions. Change from size to size is done quickly, and by power, if you wish. Handy Power-master Clamps have what you need now.

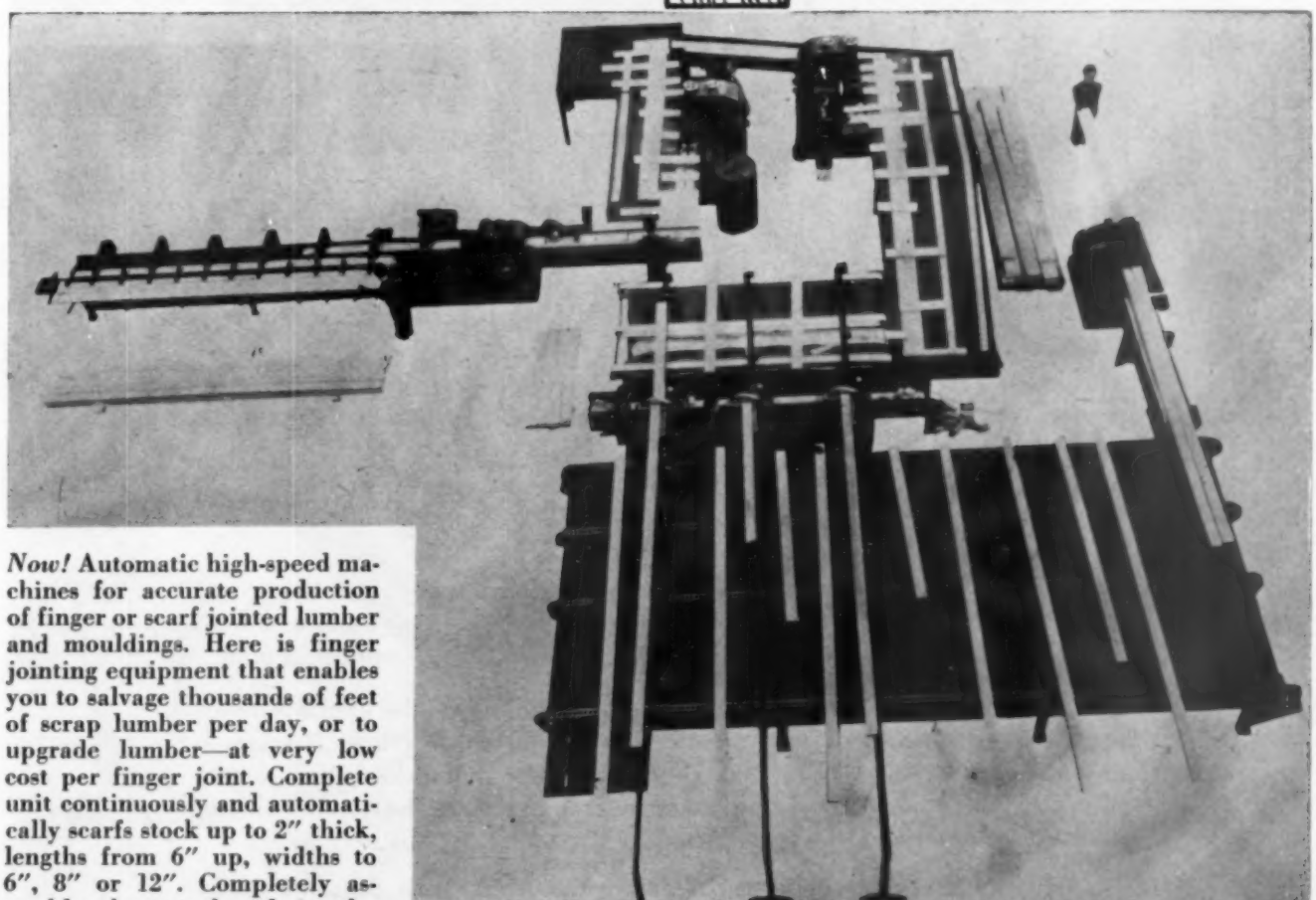
DOOR CLAMPS
Big doors, little doors, shutter doors, overhead doors, hollowcore doors — no matter the type or size — Handy has newly engineered the right one for your work.

HANDY Manufacturing Company
2436 West Lawrence Avenue • Chicago 25, U.S.A.

INDUSTRIAL *automatic*
FINGER JOINT CUTTING and ASSEMBLY MACHINES



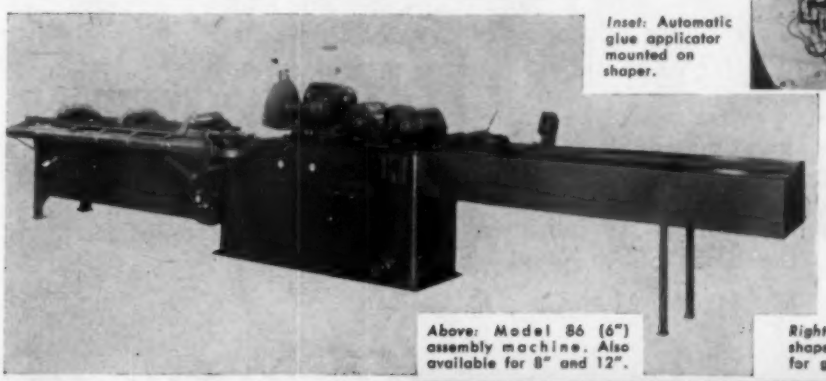
A NEW WAY TO TURN SHORT LENGTHS INTO LONG PROFITS



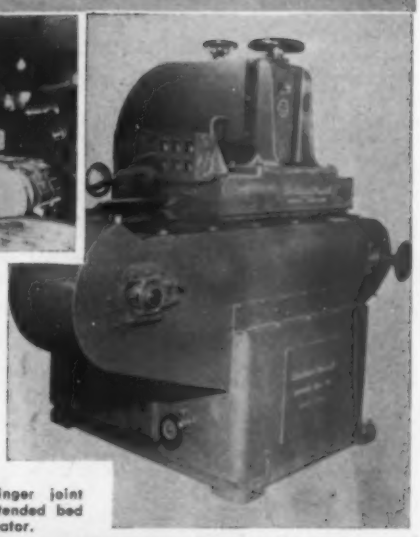
Now! Automatic high-speed machines for accurate production of finger or scarf jointed lumber and mouldings. Here is finger jointing equipment that enables you to salvage thousands of feet of scrap lumber per day, or to upgrade lumber—at very low cost per finger joint. Complete unit continuously and automatically scarfs stock up to 2″ thick, lengths from 6″ up, widths to 6″, 8″ or 12″. Completely assembles short stock and cuts the glued up material to any given length up to 24′. All equipment quality and precision made for years of high-profit waste utilization.

More than 50 conveyorized finger jointing plants like this are in production. (Photo of scale model)

Inset: Automatic glue applicator mounted on shaper.



Above: Model 86 (6″) assembly machine. Also available for 8″ and 12″.



Right: Basic finger joint shaper with extended bed for glue applicator.

Installed now in many leading woodworking plants across the country.

Write, wire, phone today for descriptive literature and prices.

TRI-STATE MACHINERY CO.

3000 COMMERCE • DALLAS, TEXAS

The Editor's Page

What Is A Lumberwolf?

Some of you may not have read "The Fable of the Lumberwolves," by Bob Mahaffay of the West Coast Lumbermen's Association. Everyone should read it. Here's the story in greatly condensed form.

● Lumberwolves were once the greatest beasts of the forest. Everyone—the steelephants and the alumilions and the chemicreatures—respected them. The lumberwolves dined while the others watched greedily.

● But in this utopian state the lumberwolves began criticizing one another. They forgot that, despite individual differences, they had dominated the forest.

● During the various arguments, the steelephants crept into the caves of some lumberwolves. However, the lumberwolves continued to ostracize members of their group whose coats were shorter or varied in color.

● By the time the battle was over a good many of the lumberwolves had perished, and those that remained were not worth much. The steelephants and the alumilions and chemicreatures, meanwhile, had eaten all the lumberwolves' food and taken over the caves. The lumberwolves were no longer powerful enough to object!

This fable is not without a rather obvious point! Let's do some thinking about it during the summer. Fall will see another full schedule of conventions and meetings of one kind and another. These might be good places to repeat this fable and its sad conclusion.

We have tried to ask some realistic questions in the last four months on the "Editor's Page." We asked: Who is responsible for the future of wood? Who should stimulate public education about wood products? Who should buy wood products? Who should believe in and support wood research?

Sincere participation in answering those four questions would help our industry, but basic to all such endeavor is cooperation among ourselves.

Shall we enjoy prosperity brought by our own efforts, or, like the lumberwolves, speak of "the times of glory they had once enjoyed"?

E. McDaniel
Editor

NEW SYMBOL OF *Style*

NEW STANDARD OF *Quality*

Styled by an internationally known designer of fine furniture, Dot's new C-F glides combine ferrule and glide in a single unit that's as distinguished for beauty as it is for quality. Primarily designed for wooden furniture, Dot C-F glides can, with some modification, be adapted for use with tubular metal legs.

The bases of all Dot C-F glides tilt and swivel to facilitate leveling on any floor surface. Attachment can be by means of nails, screws or press fit.

Variations on the simple, classic shapes illustrated above are virtually limitless. The artist's sketches at left suggest a few of many possibilities and, where volume warrants, our design staff is ready to create special C-F glides to your specifications. A large "idea" portfolio of custom designs is available for your consideration.

COMBINATION DOT FERRULE *Glides*

CARR FASTENER COMPANY CAMBRIDGE 42, MASSACHUSETTS

Division of United-Carr Fastener Corporation

Write the Editor if you are interested in contacting any of these readers.

"May I express my many thanks for the help the WOOD WORKING DIGEST gave us with a recent inquiry about machinery. The information and help we received as a direct result of your effort for us was of great value.

"At present we use balsa wood in the manufacture of duck decoys. We would like to find a very light wood grown in this country to replace the balsa. I understand that possibly tupelo or ash serve as a replacement. If you can give us any information as to mills or other suppliers of these woods, it would be greatly appreciated."

—R. J., Pennsylvania

"As a manufacturer of dowels I have on hand a great deal of oak which I can put into dowels, but the problem is that I have not found any people that have use for oak dowels. I can furnish them in ½" to 1" in diameter and up to any length. I would appreciate information on the marketing of oak dowels."

S. H., New Hampshire

"We need a supply of cut-to-size bass and white pine, size 14" x 4½" x 2¼" finished (planed) two sides. Also hickory and hard maple, size 12" x 1¾" x 1¾", planed four sides. We use these items throughout the years for a standard item."

—H. P., Illinois

"I read the article on beech recently *(May, issue—Ed.)* and was fascinated by it. Am looking forward to the rest of the series. I am one who appreciates 'unstuffy' writing and/or speaking, and wish there were more abroad for educational purposes."

—G. B., Massachusetts

"We are interested in receiving additional information regarding definitions of grading terms used in regard to hardwood lumber. We are particularly interested in buying correctly the cherry lumber which we propose to use in our furniture manufacturing operations."

—A. M., New Hampshire

"We are interested in a small multiple borer capable of boring 10 small holes for a 6d nail in a piece of wood ¾" x 4¾" x 55". Also, is there a machine that will cut a horn in a sill that is 1⅝" x 7" x 38"? The horn is 3" x 5" on each end with a bevel back."

—M. L., Florida

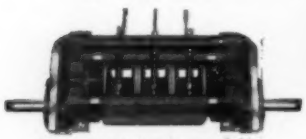
Your request

A low cost 6 roll planer and matcher with the FEATURES of the high priced machines

NEWMAN M-68 BALL BEARING PLANER and MATCHER

Heavy duty quill mounted side head spindles.

Alloy steel forged "DYNETRICALLY" balanced cylinders. Four or six knives



Sectional chipbreaker available.

Bottom head pulls out for quick grinding and changing of knives.

- Six 8" diameter feed rolls.
- All cutterhead bearings—interchangeable.
- Built-in jointing devices.
- Ball bearing belt tighteners—for all belts.
- Inclined bottom bed plate.
- Gears interchangeable—heat treated steel.

"A full car load of beautifully finished Lumber every day"

DELIVERY FROM STOCK—IF YOU HURRY

WRITE US TODAY

FOR FULL DESCRIPTIVE LITERATURE AND QUOTATIONS

NEWMAN MACHINE COMPANY, INC.

GREENSBORO, NORTH CAROLINA · U.S.A.

Why Comet Radial Arm Saws can TAKE IT!

SMALLEST COMET MODEL, THE WORKSHOP, IS USED IN THIS BIG SHOP FOR SHAPING (ABOVE), AND CROSSCUTS WITH COMET STOP GAUGES, FOR ACCURACY, ECONOMY AND EASE OF OPERATION

YEAR AFTER YEAR smooth-gliding Comets keep cutting with the greatest of ease, accuracy and safety, and the least expense. The Comet's sturdy arms roll through 8 permanently lubricated ball bearing rollers COMPLETELY ENCLOSED AND PROTECTED FROM DUST. On the Comet no rigid arm is in your way. The ENTIRE WORKING UNIT MOVES BACK after the stroke. On heavy duty models a return spring pre-sets cut-off strokes and assists quick return of the blade. Comets are engineered and built RIGHT FOR EVERY CUTTING JOB, from the small "Workshop" shown above, to automatic or manual panel cutters in sizes to fit your needs. Check the list below and mail coupon for specific information about COMET COST-CUTTERS FOR YOUR BUSINESS.

AND DO YOU KNOW WHAT THE COMET QUICK-SET DADO CUTTER CAN DO FOR YOU?

It's the only one in the world you can set for ANY WIDTH from ¼" to 13/16" without removal from the arbor. The COMET QUICK-SET DADO is perfectly balanced, cuts clean grooves without wobble or vibration at all settings, and stays sharp five times longer than conventional dados. Use it once and you'll never be without it. Also available in 9" size that cuts up to 1 1/16" dados.

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WOODWORKING METAL WORKING POWER TOOLS AND EQUIPMENT

- ☐ Radial arm saws
- ☐ Roller extension tables
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- ☐ Quick-set dados
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- ☐ Davis & Wells shapers
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- ☐ D & W boring machines
- ☐ D & W band saws (wood)
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- ☐ D & W belt sanders
- ☐ Timber cutters
- ☐ Metal cut-off machines
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to management

Washington

There are many who feel that President Eisenhower's aim for this second term is what he has called "A soldier's peace." What is this? Well, it is not total peace, but a peace based on all parties recognizing one another's armed might and hesitating to become aggressively belligerent. There will be threats to fighting, but no actual taking up of arms. This may take some time to accomplish, but it will be an easier peace than the one we are having now.

If we could be sure that all the talk about "open up; trade more; visit more; exchange the cultures of all nations" would really be adhered to by all parties concerned, it would be an excellent way of stimulating peace. This is anyone's guess as to how well the idea would fare and we trust that the U.S. will exercise a certain amount of caution in our cooperation.

Most big unions have headquarters in Washington, D.C. This particular part of the labor world is shocked by the recent trend of events in Senate hearings. More clean-ups are planned. Also local bargaining with employers will be supervised more by national headquarters. This, in some cases, will make it tough for employers.

As the 85th session of Congress enters the last few weeks, there is a great deal of wrangling between and within the Administration and Congress. This may stall a good deal of legislative action. Many major proposals will be left hanging when Congress adjourns in July.

Business

Everybody talks about inflation, but seemingly no one is doing anything about it. Well, what can be done? This indirect or roundabout inflation which we are experiencing makes it almost impossible for improved industrial productivity to keep pace with price and wage advances geared to the over-all cost of living.

High cost of living is due to go still higher in the next few months. It may level off some when the usual midsummer weakness in food prices sets in.

Productivity so far in '57 has been going up faster than wages, and industrial raw materials prices have been easing since last December. However, the cost-push squeeze is still very evident.

The industrial production curve for 1957 will probably result in both the end and beginning of the year reaching the same level. Between these two points there has been a slight dip.

There are some signs of improvement in housing, paperboard, lumber, steel scrap, and appliances. More government aid may be on the way to help homebuilding, but it will come too late to help housing starts in 1957.

Foreign

Every nation except the U.S. wants to trade with Red China. British have opened the way and others will follow. Meanwhile, American firms that want to do business in China should get ready.

There is the same trend reported in considering trade with the red satellites in eastern Europe. Our allies in western Europe are determined to tear down trade barriers and to resume east-west trade as before the war.

Our allies all want to make some deals which are essentially compromises. They think that the U.S. is too stiff-necked and too belligerent. This attitude is not new, but it is rising in intensity and some of our allies will blow off soon.

In the immediate future—and months ahead—there will be many changes in our foreign relations.

Taxes and Legislation

Fifteen states have already upped the maximum benefits payable for temporary total disability. A number of other states will follow.

Net income before taxes of a representative group of American producers of hardwood plywood declined to less than 2% in the second half of 1956, according to a report from the Hardwood Plywood Institute. Seidman & Seidman, accountants for the institute, made the survey among 34 producers.

Eric Larson, president of the institute, says that the Seidman & Seidman survey should help demonstrate to Congress the need for bills setting a quota on imports.

GRADE AND TALLY—

As You Stack—

with the MOORE CHAIN-ARM STACKER

Imagine what you can save by *grading* and *tallying* at the same time the lumber is *stacked!*

Kent-Coffey Mfg. Co., Lenoir, N. C., is saving time, labor—and money—by combining these operations on the Moore Chain-Arm Stacker shown above. The tallyman sits at a desk away from the stacking area, and gets tallies from the inspector by radio-phone (see pictures at right).

Savings in stacking costs can soon pay for the Moore Chain-Arm Stacker. To learn how YOU can save, have our representative make survey of your layout. No obligation—write today.

MOORE DRY KILN COMPANY

Oldest and Largest Manufacturers of Dry Kilns and Veneer Dryers

JACKSONVILLE FLORIDA | BRAMPTON, ONT. CANADA | VANCOUVER, B. C. CANADA | NORTH PORTLAND OREGON

Higher profits but lower margins seems to be the story for 1957 as well as 1956. Manufacturers' profit margins as a percent of sales continue to be trimmed as businessmen find that it takes quite a gain in sales to yield even a small gain in profits. Small firms seem to be doing somewhat better than the larger firms in the current battle against dipping profit margins.

Feeling is stronger than ever that there will not be tax cuts this year. The Senate definitely wishes to wait until 1958 before considering the matter.

Small business loans will be upped to $500,000 from $250,000, and the Small Business Administration made a permanent affair.

Congress plans to spend more on itself—45% more in coming year than it spent two years ago. Total for rest of Government is 8%. However, we hear nothing about this higher spending!

Two new office buildings are going up, despite the fact that Congress already has three. New ones are said to cost over 120 millions.

A costly subway system is being extended to all five buildings from the Capitol.

And the payroll is going up—hundreds more people are to be hired to help Congress do its work.

Employees and Employment

Employees of the wood and woodworking industry recently organized eight more credit unions to serve over 5,000 members. Members formed their credit unions to encourage thrift and regular saving, and to provide each other with low cost personal loans. Information is available from the Credit Union National Association, Madison 1, Wis., about opening a credit union in your plant.

Education

The United States has joined in technical cooperation programs with more than 50 nations and dependent territories throughout the free world. One aspect of U. S. technical cooperation programs that has become increasingly important in the last five years is the "university contract," whereby the participation of American universities and technical institutions is enlisted.

Today American universities have an enrollment of some 34,000 foreign students. At the beginning of 1957 there were 84 such contracts in operation, with 54 American universities and technical institutions. Activities were being carried out in 38 foreign countries and territories, and there were in addition four regional contracts.

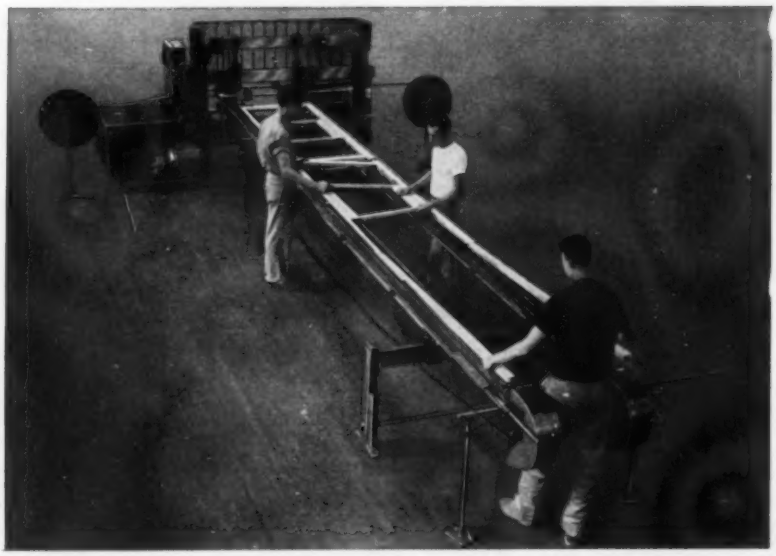
Summer months will be back-to-school time for thousands of executives throughout the country. The number and variety of courses offered by colleges, universities and trade groups increase each year. Classes in all phases of operations are available for businessmen in sessions lasting anywhere from five days to six weeks—at an average cost of $75-$350.

How the newest research tools and results can be used by small business will be the subject of a special Government-sponsored conference to be held in Washington, D. C., September 24-26. The conference stems from a recommendation made by the President's Special Cabinet Committee on Small Business. Its focus will be research in product development and distribution.

SARANAC *Specialized* FASTENING MACHINES SOLVE PROBLEMS

CASE HISTORY NO. 1

SARANAC MACHINE BOOSTS PRODUCTION 900% PER MAN-HOUR



YES, 900% IS CORRECT! This is just one dramatic example of how specialized Saranac Machines often cut production costs astonishingly! In many cases—perhaps yours — a *standard* Saranac Machine, large or small, can deliver equally important savings in time and labor.

IN THE CASE ABOVE, the machine is a special multiple-head corrugated fastener driver, manufacturing modern flush door frames. Where 3 men formerly hand-fastened 53 door frames per hour total, they now produce 480 per hour! Quality is more uniform too.

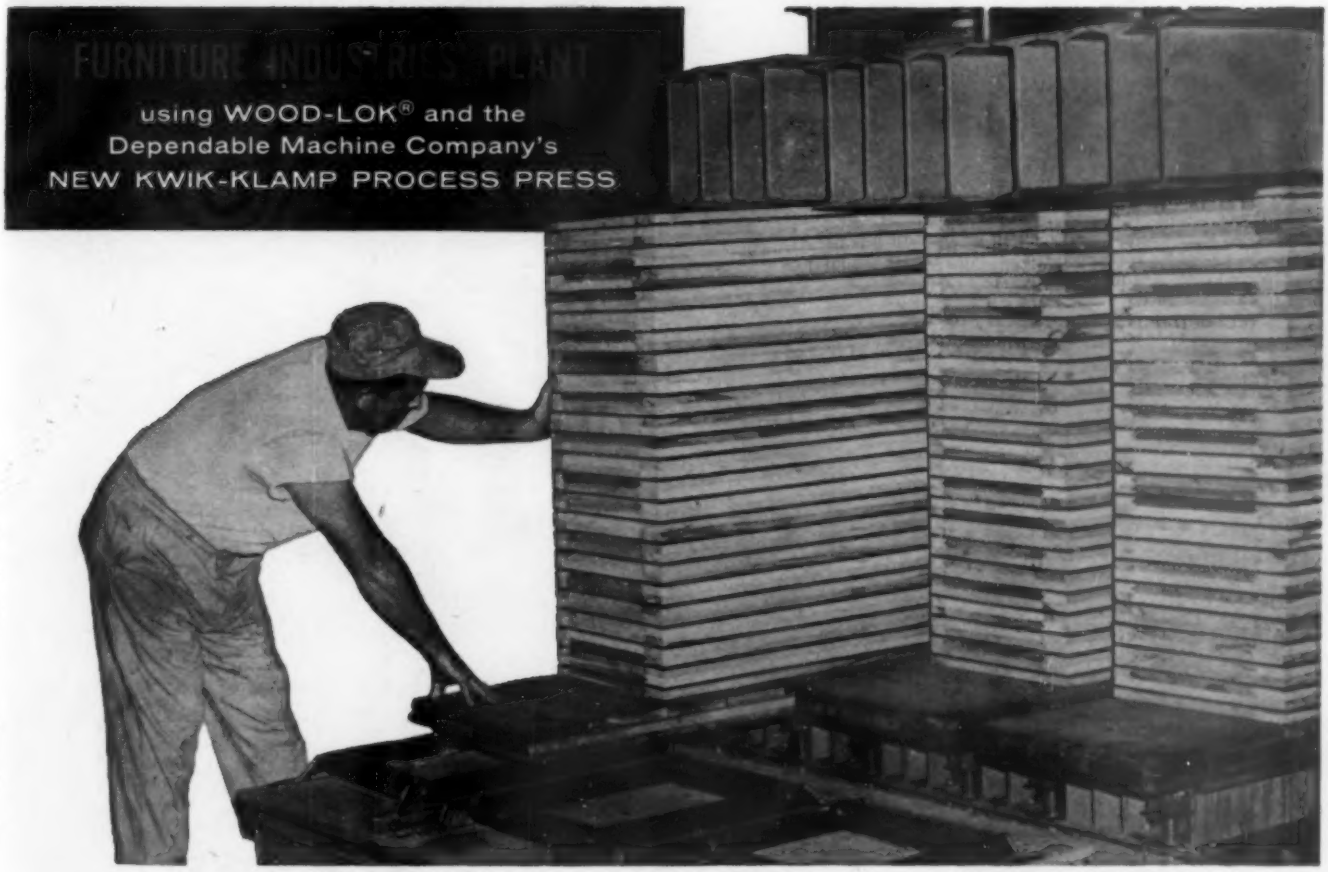
IF YOU HAVEN'T INVESTIGATED the capabilities of Saranac Wire Stapling Machines—or Corrugated Fastener Drivers—do it now! Describe your problem and send samples of material if possible. We'll reply with suggestions.

SARANAC MACHINE COMPANY
BENTON HARBOR, MICHIGAN

Manufacturers of the World's Largest Line of Fastening Machinery

FURNITURE INDUSTRIES' PLANT

using WOOD-LOK® and the
Dependable Machine Company's
NEW KWIK-KLAMP PROCESS PRESS



Saves 16 Man-Hours a Shift!

NO CLAMPING Furniture Industries' Plant for mass producing bedroom furniture in Florence, S. C., is now fully modernized. Costs are lower because WOOD-LOK, National's faster setting, stronger bonding glue, has completely eliminated unwieldy I-Beams and clamps. Production is faster because the Dependable Machine Company's New Kwik-Klamp Process Press handles three stacks at once, utilizing full press height. The result? Savings of 16 man-hours a shift.

MULTISECTION PRESSING
Increased production efficiency pays for new press in less than a year. Even pressure distribution reduces rejects. Lowest priced sectional press available. Sold exclusively by National.

FASTEST BONDING
WOOD-LOK needs only a 15-30 minute press. Reaches machining strength in an hour or less instead of six hours or longer. Eliminates curing rooms as well as the cost of clamping.

SIMPLIFIED GLUING
WOOD-LOK is an unmatched cold run resin glue that requiries no mixing or heating. Lasts all day in the pot. Cleans up readily with water. Nonirritating to skin. Virtually odorless.

STRUCTURAL PRODUCTS DIVISION
National
STARCH PRODUCTS INC.

INTERESTED? Ask to have one of National's Field Engineers tell you more about the time-saving features of WOOD-LOK and the NEW KWIK-KLAMP PROCESS PRESS.

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270 Madison Ave., New York 16 • 3641 So. Washtenaw Ave., Chicago 32 •
735 Battery St., San Francisco 11 • 1511-23 So. Main St., High Point, N. C.

WABASH HARDWOOD SLIDES

smooth
quiet
operation

EASY ACTION

Better Quality at Lower Cost

Easy Action

MEANS MORE SALES

BETTER OPERATION, more ingenious construction, modern appearance! That's what it takes to place a table on the "best seller" list. Wabash Slides and other tested ideas will help give your new pattern just what it needs. Have Wabash Slides and all extension features "engineered to your table" to assure smoother action, smoother production.

Wabash also builds a complete line of table slides, drop-leaf and folding leaf equipment. The Wabash Self-releasing drop-leaf supports avoid pinched fingers . . . add real sales appeal. Wabash Top Locks in several styles are positive in action. Wabash Folding Leaf Equipment is available for many styles of construction. Whatever your extension problem may be, Walter of Wabash can help you.

Write today for more information.

Engineering

SERVICE FREE

Planning new tables? Send a print of each to us. We'll plan the extension or folding features for greatest economy of manufacture at no cost to you.

Have Your Table Extensions Styled by Specialists

B. WALTER & CO., INC. · WABASH, INDIANA

Walter of Wabash

GRANITE BOARD is an exceptionally uniform particle board that's sanded to ±0.005" thickness before shipment from our plant in New Hampshire. Makes an ideal core for plastic and wood veneer overlays because its smooth surface has no grain to telegraph. Often makes cross-banding unnecessary. Too, Granite Board can be used as a continuous core. Eliminates the sunken joints that result from edge-gluing.

GRANITE BOARD is made of long fibers of strong Eastern White Pine. Resin bonded. Hot pressed. The grain stresses found in lumber cores—and plywood as well—are nonexistent. Expansion and contraction are equal in all directions regardless of changes in temperature and humidity. Moisture content after curing is scientifically controlled to 7-9%.

GRANITE BOARD saves up to 10¢ a square foot when used as a core stock for wood veneering. Thicknesses range from 3/8" to 1-3/16". Standard size: 48½" x 96½". Special sizes to 16' long. Available in densities of 40 pcf and 30 pcf. Send coupon today for full information.

YES! I'm interested in Granite Board

Structural Products Division
National Starch Products Inc.
270 Madison Ave., New York 16

☐ Have a representative call to show me how Granite Board can fit into my operation.

☐ Send more information and a small sample.

NAME_____

POSITION_____

(Mail this coupon with your letterhead)

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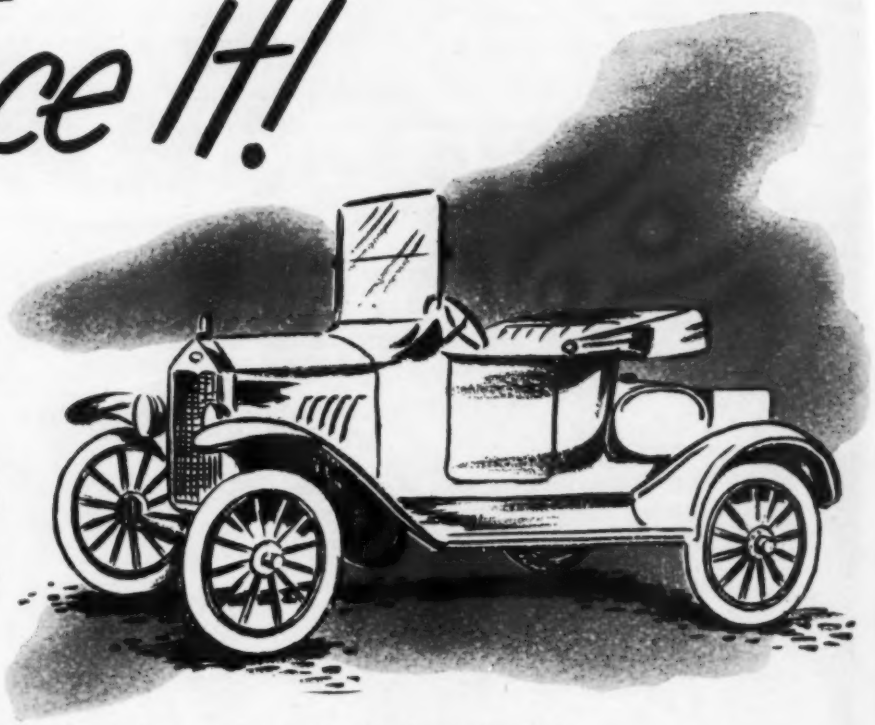
MAKERS OF WOOD-LOK **AND** GRANITE BOARD

Let's Face It!



IT STILL RUNS ...BUT

you wouldn't depend on it for transportation today. Similarly, old woodworking machines can hardly be depended upon to produce *profitably* in today's competitive markets.

DO YOU *KNOW* HOW OLD YOUR MACHINES ARE?
DO YOU *KNOW* WHAT MODERN MACHINES WILL DO FOR YOU?

In this period of changing skills when more and more people come to you with high school and college educations, the emphasis is on mental rather than physical job requirements. Modern machines attract this better help . . . upgrade your labor force. Modern machines produce profitably for you. Get your machine replacement program moving. Start now and shift it into high gear today.

Put a profit in your woodworking with MODERN MACHINES

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WOODWORKING MACHINERY MANUFACTURERS ASS'N.
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Please send further information. I am interested in the following types of machinery_____

Name_____
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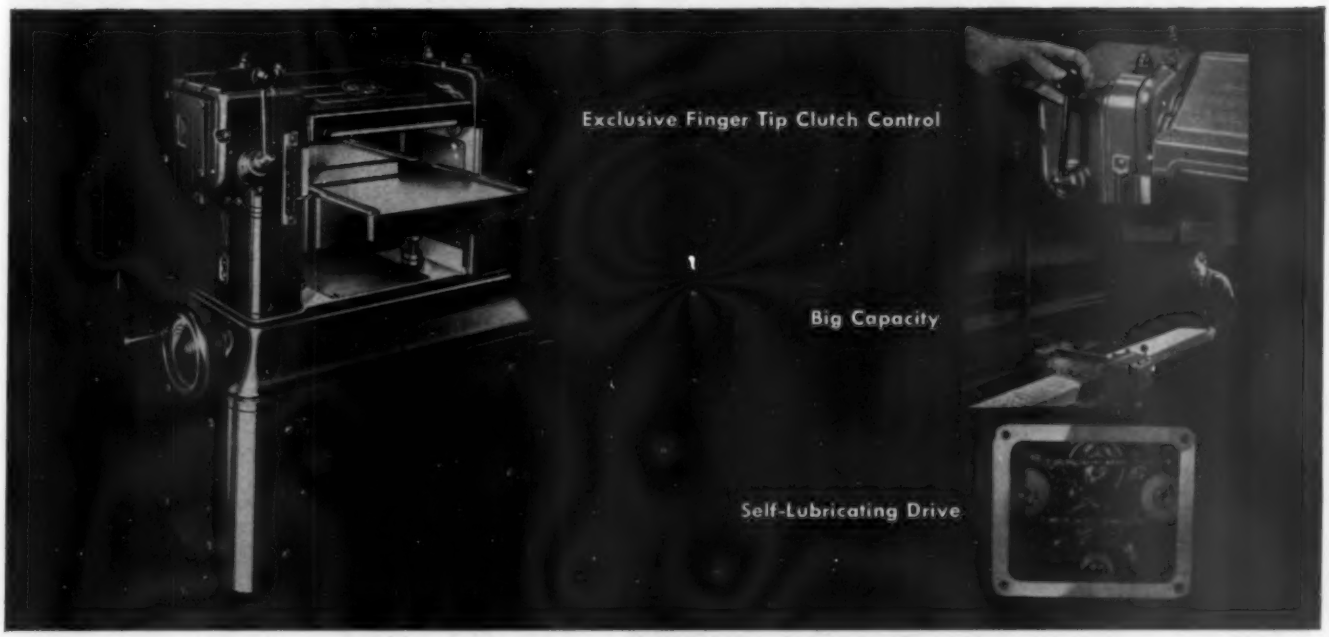
ROCKWELL-BUILT

DELTA 13"x5" planer



. . . smooth, fast, versatile—and safe

The Delta 13" x 5" Planer is designed to deliver smooth, accurately finished stock fast—with greater safety than any other planer on the market. And it's ruggedly built to keep on delivering this top performance, even under the heaviest day-after-day work loads. No other planer gives you all these Delta Quality extras:

EXCLUSIVE FINGER-TIP CLUTCH CONTROL—You can stop and start the feed control mechanism instantly with a simple turn of the handle—no need to touch the motor switch. Nearby depth scale is easily read from any operating position.

SAFER TO OPERATE—All moving parts are enclosed or guarded. Positive table stops prevent blades from striking table and safety type chip breaker keeps your fingers away from the knives.

SELF-LUBRICATING DRIVE—The double worm-gear reduction drive is automatically lubricated as it operates—prolonging the life of the Delta planer.

BIG CAPACITY—You can cut stock from 1/16" to 5" thick and up to 13" wide with the versatile Delta planer. Pieces as small as 6" can be worked without follower, unbutted—giving you a wide range of operations.

LESS COSTLY "DOWN TIME"—Ruggedly built, the Delta planer saves you money by reducing costly delays due to breakdowns. No excessive time is lost in replacing dull cutterhead either—it's a matter of minutes.

SEE THE DELTA 13"x5" PLANER Get all the facts—compare—then make up your own mind! Your Delta Dealer is listed under "TOOLS" in the Yellow Pages of your telephone book.

Send Coupon For All The Facts!

another product by

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Delta Power Tool Division, Rockwell Manufacturing Co.
666G N. Lexington Ave., Pittsburgh 8, Pa.

☐ Please send complete catalog of Delta woodworking tools.
☐ Please send names of my nearest Delta Dealers.

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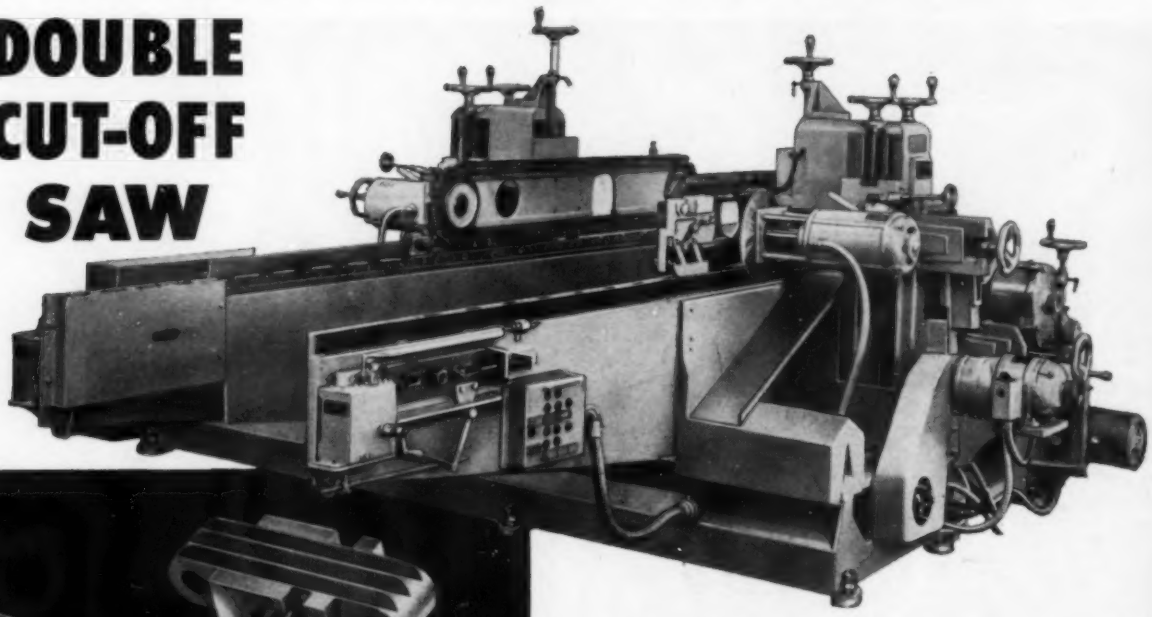
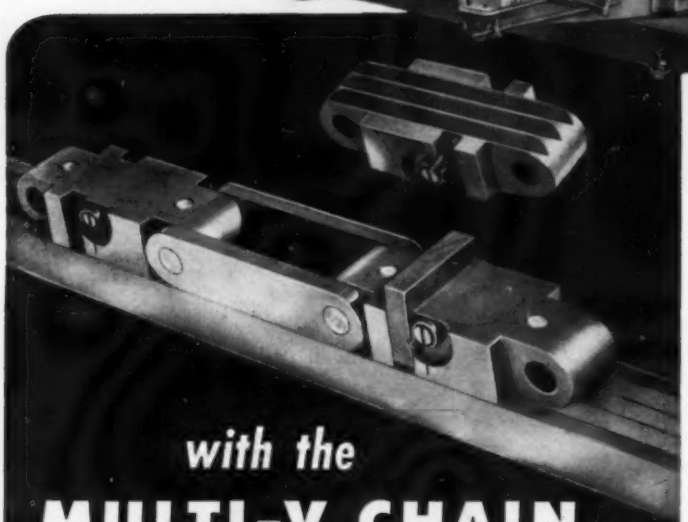
All Welded Steel Construction

on the MEREEN-JOHNSON NO. 300

DOUBLE CUT-OFF SAW





with the

MULTI-V CHAIN

This special chain is furnished on the M-J No. 300. Note the 45° angle of the three V grooves to prevent sideways movement. The inverted center link clearly illustrates the full length bearing surface in both horizontal and vertical planes. There is approximately 55% greater horizontal and 95% more vertical bearing area than with low angle single V-chain. Patented snap dogs are standard equipment.

The No. 300 is offered to meet varying working conditions. It can be equipped with regular or high speed cope motors, stationary or jump dado arbor or other accessories as required. The sturdy, welded steel construction . . . rubber block hold-downs . . . snap-on feed dogs . . . and variable feed drive are only a few of its outstanding features.

Write for the No. 300 Bulletin

MEREEN-JOHNSON MACHINE CO.

4401 LYNDALE AVE. NO. • MINNEAPOLIS 12, MINNESOTA

CUT-OFF SAWS / DOUBLE CUT-OFF SAWS / MULTIPLE CUT-OFF SAWS / GANG RIP SAWS
TENONERS / VENEER & PLYWOOD SIZERS & JOINTERS / RESAWS

WHY USE CARBIDES?

By Arthur Segal

North American Products Corp.

New materials, larger markets, faster setting glues and power feed machines have made it imperative for everyone to evaluate the benefits of carbide tools.

It may be realized by only a few outside the industry that a remarkable change in the concept of processing has been evolving in the past six years in the woodworking field. This industry has been adamant to change compared to its closest counterpart, the metalworking field, because of the unimportance of accurate duplication of parts, the easier machineability of the material and the ability to hand-work finishes. Lower labor costs with lesser demands for highly skilled men may have been an influencing factor also, but that was to a great extent offset by lower values in the end product.

The advent of many new materials both harder and more abrasive than woods, including the decorative and industrial plastics, composite hardboards, chip-boards and fireproof woods, along with the demands of the designers and customers for these materials, plus new products and larger markets, started the trend to power feed machines, dimensional control of parts, development of faster setting glues and better tooling.

Of these things which have brought a better understanding of the benefits of high "production" methods and provided improved quality at a lower cost, none was as easy to convert to, or as effective in producing immediate benefits as tungsten carbide cutting tools.

The conversion to carbide requires neither change of equipment, change of feed rate regardless of whether previously manual or power fed, nor change in machine r.p.m. for successful results. The simplicity of conversion holds in the operation of saws, groovers, router tools, planer and jointer knives, shaper knives and cutters, and any other tools adaptable to carbide.

The benefits derived from converting to carbide are in no way dependent on high production operations, but are established in any single unit. For clarity it is best to make a comparison breakdown on individual tools representative of a group in design and operation as follows:

In the case of steel saw blades the teeth are normally of the same material as the body steel and since the steel must be ductile enough for the teeth to be set and filed, the hardness must be below that of the file, usually 40 to 45 Rc. The body of the carbide blade is not influenced by the teeth and can be made of very high strength alloys and heat treated to obtain higher strength while the carbide tip will range in the 85 Rc ranges; hard enough to cut glass which even the file used to sharpen steel saws cannot do.

The manufacturer's tooth form is lost more quickly when steel blades are sharpened for the teeth are necessarily crowded into a smaller and smaller circumference. The manufacturer's tooth form stays practically the same in carbide saws since the carbide blade is reduced very little in sharpening.

The original intent of the carbide tipped blade, was wear resistance, but because of the hardness of carbide, necessitating the use of diamond grinding wheels in sharpening with a wheel infeed of only .00025" to .0005" per pass, an accuracy developed when each tool carried an equal load in the cutting and the teeth were also precisely aligned. This resulted in smoothness of cutting beyond any previously known standard with enormous savings in material handling and secondary operations where gluing could be accomplished right off the saw. Not only did the carbide blades cut the new, harder materials easily, but the cuts were finer and smoother. Tenoner operations on veneers, formerly a serious cutting problem came off the carbide saws finished. The accuracy and wear-resistance of carbide tools in general, and carbide saws in particular have provided the woodworking industry with 40-50 times longer cutting life on their tool and savings as incredible as 1500% on the tool cost.

It is seldom necessary to go beyond the savings resulting from smooth cutting to determine the economical advantage of carbide, however a typical analysis might sustain the following comparison:

	Steel Blade	Carbide Blade
1. Cost of rip blade	$17.00	$100.00
2. Duty on automatic rip machine	hard hardwood	hard hardwood
3. Hours run between sharpenings	10	400
4. Down-time for saw changes, in minutes	5	5
5. Saw changes per year (2000 hours)	200	5
6. Cost of sharpening each time	$1.50	$10.00
7. Total cost of sharpening per year	$300.00	$50.00
8. Number of sharpenings in blade	40	25
9. Number of blades used per year	5	1/5
10. Cost of new blades per year	$85.00	$20.00
11. Lost production time per year - hours	16½	½

Although there are comparisons available where even longer savings are involved, the above would indicate unquestioned economy even without considering the fact that the materials cut with carbide were glued right off the saw, whereas all the materials cut from the steel blade had to be rehandled for a secondary finishing operation.

In router bit operations, field reports show that from 8-12 steel bits are dulled to one carbide bit operating on the same duty. Here smoothness is still a factor for clean edge cuts are obtained for longer periods of time because the carbide cutting edge stays sharper longer with subsequently less load on the machine and less operator fatigue.

Two operations, drilling and undercutting, are performed on this machine at H. & A. Selmer Inc., Elkhart, Ind. Carbide cutters used on grenadilla wood did not require sharpening for six years.

Operational data on solid carbide planer knives gives runs of from 50 times to over 80 times more material cut than obtained with steel knives. Carbide tipped shaper knives have even exceeded these figures on operations involving laminated plastic tops on chipboard cores, for not only is the plastic laminate very wearing on steel, but the glue line will rapidly groove the cutting edge. Carbide on the other hand, is not adversely affected by glue, and its hardness insures chip-free edges on the tough and abrasive plastic.

The facts are well proven that were there but equal costs between carbide tools and steel tools, the indirect benefits of better cuts and fewer cutting problems would warrant the change.

The facts also would indicate that the woodworking industry should have converted to carbide long ago. There are several reasons why the conversion has only gained momentum in the past several years. First, there was the initial disbelief in the ability of carbide to continue to give such exceptional results, and secondly the question of steel saw filers located in or near the plant not being able to service the new blades; and third, the price factor with carbides initial costs ranging five to seven times the steel tool counterpart.

Two of the most prominent factors that not only slowed the woodworking industry's conversion to carbide tooling, but actually created a resistance to carbide are: (1) the costly error of assuming all carbide tools sold to be alike in design, performance and quality, and (2) the troubles encountered by those who bought on "price."

Like the "dime store" toaster that does toast bread, the cheap tire that is of course round and black, and numerous other every day articles that look all right and feel all right but are not otherwise representative of the normally accepted product, carbide tools lend themselves to equal substitution of materials and finishing not visible to the eye or visible to the operator within a limited evaluation period. There are many irritating and costly mementos of such tools hanging on walls and laying in offices serving as bitter reminders of unanswered requests for service or unanswered letters requesting refund of the price of the tool. In many cases the qualified tool companies have had to offer their free efforts to salvage such tools in order to break down the aversion to carbide so that the benefits of quality tools could be proven.

Economy in buying is a basic principle of sound business. This does not imply that economy and low price buying are equivalent in meaning. In fact in many instances they are exactly opposite, for example: One carbide saw blade lists

Proper storage is important for carbide cutting tools. Here is a storage box for blades of various sizes. Each blade has a separate niche.

at $125.00 and another is offered for $75.00 to do the same job meeting the same blade specifications as to diameter, number of teeth, bore size and the tips of both blades being approximately 5/16" long. Consider first that if the total blade life is four years, the difference is roughly .25 (twenty-five cents) a week or about .05 (five cents) a day. If quality is involved it comes at a low cost.

Since the blades are offered competitively, the 40% differential in price must be attributable to some phase of business operation, or logically the higher priced saw manufacturer has priced himself out of business. If the difference is in warranty and service, the $75.00 tool is an expensive gamble. If the difference is in processing then certain finishing operations have been left out which will reflect itself in shorter tool life. If the difference is in the material used in the manufacture of the tool, the high operational speeds and high impact forces typical of saw duty will reflect itself after a given length of time, usually beyond the reasonable return period when the user feels he can justifiably complain. Usually the great price difference is a combination of these things.

Although the technical aspects of carbide are left for discussions concerning the application, care and maintenance of tools and the emphasis here placed on evaluation of carbide performance and economy, it is essential that the psychological aspects of such a change or conversion be considered. It has been found the rule rather than the exception that the woodworking machine operators, particularly the old timers, are not initially favorable to carbide tools. The feeling of responsibility in the operation of such costly tools is perhaps the basic reason for the adverse reaction, along with the normal human inertia to change to something new and unfamiliar.

There is also the normal urge to be critical during the evaluation period to evoke attention to the operator's machine and tool knowledge assumed to be requested by the selection of the particular machine for test. The possible light side of these facts are lost to the serious understanding that a machine operator has within his (the usually disregarded) means to control the setting of the tool and machine affecting the performance of the tool. It is therefore essential that where carbide tools are being introduced for the first time that the tool performance be followed up if a true evaluation is to be made.

Operator is demonstrating clean cut possible when machining particle board. Saw is a 16" carbide tipped blade on cutoff saw.

It has been very evident that the first carbide tools are a great novelty and invite curiosity to the point where varieties of materials and cutting loads are imposed to see to what extent the unusual cutting performance can be pushed. After additional tools are employed they become commonplace with very definite improvement in performance.

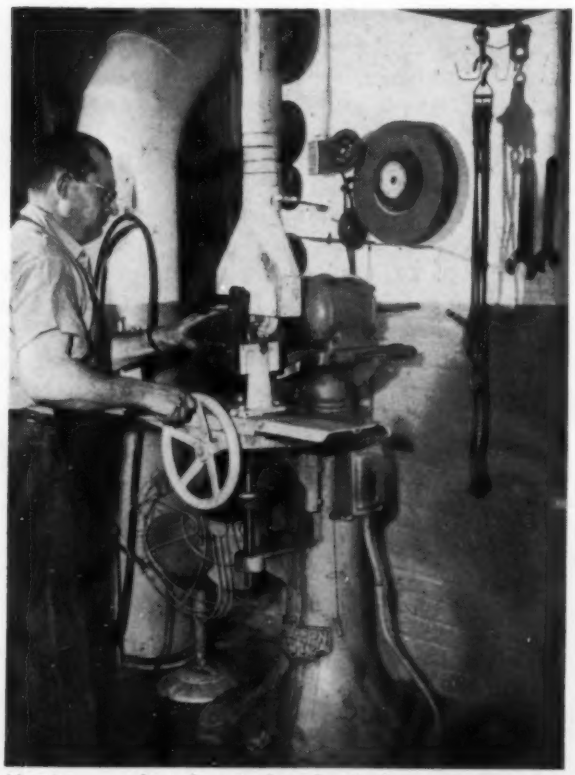
As conversion begins to take place it is then that an opportunity occurs to correct an age old disregard of tool care. The damage to steel tools through negligent and abusive handling far exceeds the cost that occurs by normal wear during cutting. It would be difficult to now change the habits of throwing small cutting tools together in a box or to educate operators that saws are damaged by stacking on top of one another, that a dull cutter is very susceptible to far worse damage when thrown against steel wrenches and parts lying on benches. These things have been an accepted practice, but an unnecessary one. Should it continue with carbide tools the problem is proportionately more serious.

These habits can be changed very adeptly and effectively. It can be done easily as the employees understand the greater cost of carbide tools and the apparent reason for care.

Such things as covering saw blade teeth with a short length of rubber or plastic air or water hose slit down one side; of router bits racked by drilling blind holes in a wood board; of separate wood boxes for cutter heads, all radiate the necessity of tool care without a word being said. The amazing result in plants where these things have been done is the infectious carry-over to all tools whether carbide or steel.

The new era of machining with the new standards of finish and performance established by carbide is well under way. Tools are available in almost all standard forms. From this point on, it is only a matter of understanding the true advantages and basic fundamentals of this easy to use new metal by those who work directly with machines and tools. ● ● ●

Operator pouring either water or a liquid catalyst into the tank of Black cold glue mixer. All necessary ingredients for the glue mix are weighed individually, before placing them in the tank. The well-like hole below the spreader gives access for the mixed glue to flow into the storage tank below the mixer.



Mattison pedestal cutterhead grinder in use at the Kroehler plant. The machine provides facilities for setting knives in cutterheads uniformly, as well as for grinding. Note the blower connection just above the grinding wheel.

QUALITY FURNITURE THROUGH EFFICIENT

- *Gluing*
- *Machining*
- *Finishing*

By

John Hyler

The Kroehler name, in its relationship to fine furniture, is one long, familiarly and favorably known. The company owns and operates numerous plants throughout the United States, plus three in Canada.

Two of these plants are located at Bradley, Illinois, known as plants No. 3 and No. 4, respectively. Plant No. 4 manufactures upholstered living room furniture; bedroom furniture is produced in Plant 3. The latter is therefore somewhat more interesting, strictly from the woodworking standpoint. Most of the illustrations in this article were taken there.

This last-mentioned factory now has 330,000 square feet of floor area. It was built in 1911; additions were made to the original plant through 1920. In the early years of the existence of this factory, production was confined to upholstered furniture. In 1932, however, casegoods was introduced into production in plant No. 3; bedroom furniture is now manufactured altogether in this factory. Plant No. 4 is the smaller of the two, containing 230,000 square feet of floor area. It is located immediately adjacent to plant No. 3, but produces living room furniture exclusively.

Top Supervision Echelon

Chief personnel at the Bradley activity includes Works Manager C. B. Kroehler; Plant Superintendent Gerber, and Assistant Works Manager Beach. These men have developed and maintained an operation at Bradley which is remarkable for its over-all efficiency and for a high order of service to the retail furniture trade. Kroehler furniture itself is so well known that little need be said about it here.

C. B. Kroehler, Works Manager

Wendell Gerber, Plant Supt.

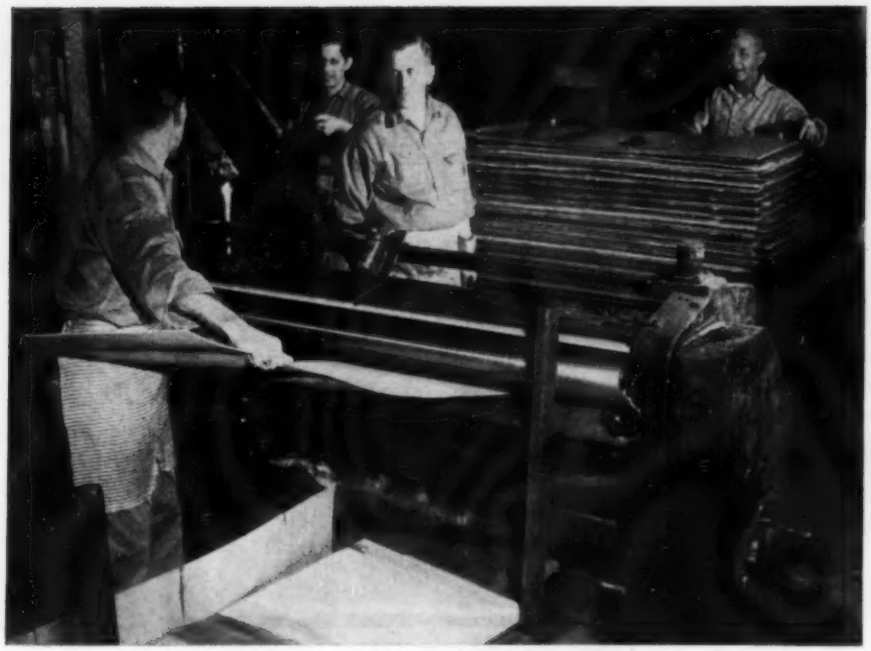
Ronald Beach, Ass't. Works Mgr.

Chief personnel who are responsible for the over-all efficiency in manufacturing operations and the high order of service given to the retail furniture trade. One feature of Kroehler's operation is the large fleet of Kroehler owned trucks which delivers the finished furniture directly to the retail dealers. Only 15% of the furniture made in the two Bradley, Ill., plants is shipped by freight.

Kroehler Mfg. Company maintains its own power plant in connection with the Bradley operation. The arrangement is such that a single power plant services both factories, generating most of the current needed for both lighting and power. A battery of eight efficient Moore dry kilns is in operation at the plant, drying all lumber used in casegoods production. Lumber species employed in manufacture of furniture at the Bradley operation include gum, magnolia, northern hard maple, oak, poplar, mahogany, pecan and walnut.

Care is exercised to maintain the

Interesting operational view of special Greenlee double-end machine, working on dust panels. These are made with panel-on-frame process.



Plies being spread and panels laid up for cold press operation. Long handle behind operator's head at left is connected to a valve in glue storage tank above. Operator can regulate flow of adhesive to roll reservoirs.

Operator keeps hopper filled with stock at this Mattison molder. Truck is positioned near enough to save foot work.

highest possible efficiency at every step of manufacturing activity in this plant. Gluing operations are carefully conducted and supervised. As is evident in the illustration of the glue mixer, this company, in common with many other progressive firms, has realized the advantages of resin glues. Therefore they make use of equipment carefully designed and arranged for mixing and handling such adhesives.

Peculiarities of Resin Adhesives

Resin glues have characteristics distinctively their own; operators must learn to handle them accordingly. High temperature in summer, for instance, is known to considerably shorten the working life of resin glue in general. In turn, this may lead to such annoyances as glue hardening in grooves of spreader rolls, in mixers or containers, and like difficulties. Such troubles can be largely eliminated by watching glue temperature, keeping it as cool as consistently possible.

Different arrangements have been used to aid in maintaining lower resin glue temperature. One of the most important of these is use of a cold glue mixer equipped with a water jacket. By circulating water through the jacket of such a mixer, glue is kept relatively cool. Resin adhesives are exothermic, liberating heat while they are being mixed. By keeping them relatively cool in the manner cited, pot life of glue is considerably extended as against what it would be without such cooling.

At the Kroehler plant, a 60-gallon Black Brothers cold glue mixer has been installed in elevated position, allowing adhesive to flow by gravity to the spreader. The glue spreader used in this plant is a Black Brothers resilient-roll unit, 74" wide, with the standard roll arrangement generally employed. The two gluing rolls are placed one directly above the other, with the upper doctor roll on the infeed side; the lower doctor roll is on the outfeed side. Both glue reservoirs are formed by the angular space between the rolls. Using this arrangement, adhesive is valved directly to the roll crotches.

Ripping Operations

An interesting clue to the volume of lumber processed at this plant is the fact that nine Mattison straightline ripsaws are in operation on the floor. Obviously, these machines rip lumber of all lengths, from full-length stock down to the shortest ordinarily found. They are particularly efficient in ripping of short stock in regard to safety, due to closeness with which the pressure rolls are spaced on centers.

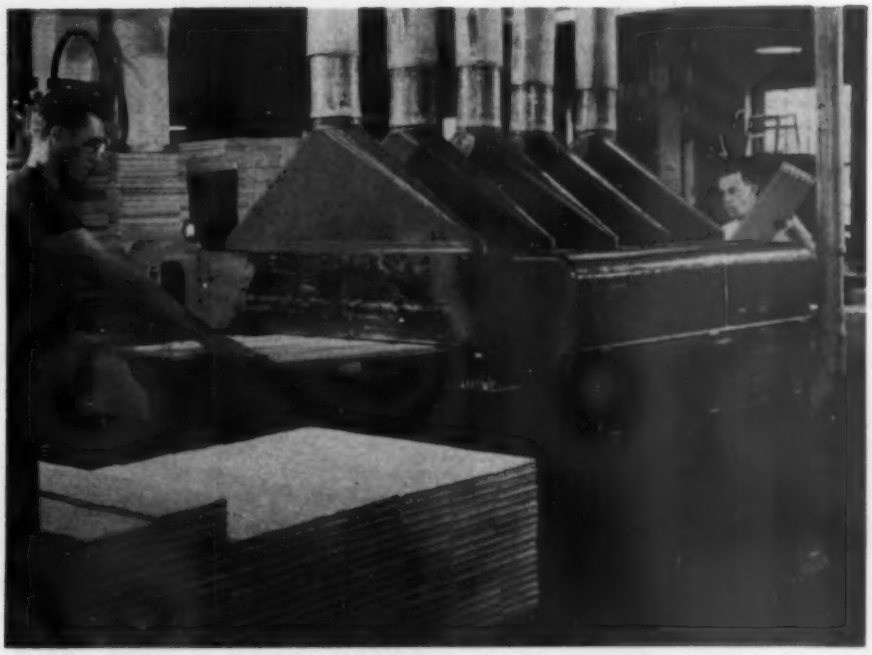
Material as short as 7½", in fact, can be handled under two rolls; where material is 13" or longer, it is in continual engagement with three rolls. Stock can be ripped in any thickness up to 4". Cutoff equipment employed is in keeping, in reference to volume it will handle, with the plant's ripping facilities.

One important link in the production chain of any progressive furniture factory is boring facilities on the floor. One boring machine much employed in this plant is a universal spindle gang Greenlee unit, on which the machine table is fed upward to the boring bits by means of a cam mechanism. The cam employed is designed to provide a uniform boring stroke; then a slight pause at the top of the stroke, which allows the bits to clean up for accurate depth in any case where blind holes are bored. The cam then provides a quick return stroke.

Aspects of Borer Feed

The arrangement is such that the machine can be operated either with continuous feed or by the single-stroke method. When used on continuous feed, a pause occurs at the bottom of the stroke, giving the operator sufficient time to un-

He can readily pick the pieces up in groups of six, eight, or more, and can easily keep the hopper filled.



Solem four-drum endless bed sander smoothing dovetailed drawer fronts. This type of machine is especially efficient in feeding and sanding relatively short workpieces.

load the freshly bored piece and replace it with a blank. Ordinarily, pressing down the foot pedal of the machine, or pushing a handle bar to the left, engages the feed for one complete stroke. The handle bar mentioned can be pushed to the left and turned to lock, however. Then, continuous feeding is provided.

A large amount of short stock is processed through the molder in this factory. The Mattison molder used is provided with a hopper feed, making it easily possible for an operator to keep the machine full. Cutterheads for the molder and other machines are serviced and kept in condition on a Mattison pedestal grinder, which has been hooded and provided with a connection to the plant blower system. The hopper used at the molder is important not only from the standpoint of obtaining higher production, but also from that of avoiding unnecessary cylinder marks across the work.

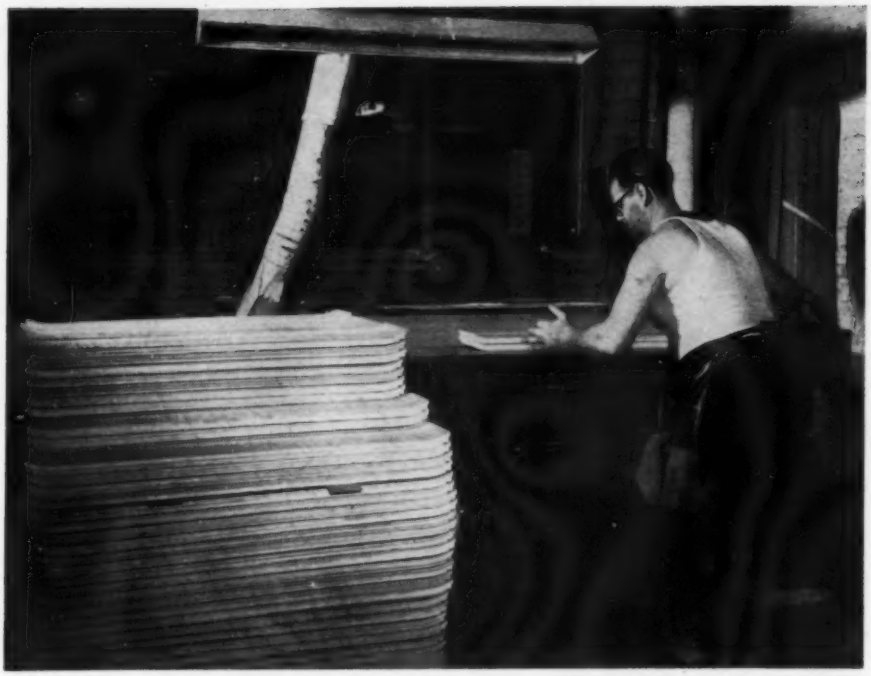
From the time material enters a molder until it emerges, it is held against the bed and against the molder fence, but the power that keeps it moving all the way through resides wholly in the feedworks at the infeed end. Therefore, whenever a short piece passes beyond the feedworks at the infeed end and another is not closely butted against it, material stops feeding through the machine temporarily. In that short interval of time, cutterheads will make cylinder marks across the work. With a fully-efficient hopper, like the one with which this machine is provided, such a circumstance cannot occur, so long as the operator keeps material in the hopper.

Grinding Knives in Cutterheads

The pedestal grinder used for molder cutterhead maintenance has facilities to insure that all knives are ground exactly alike. This is accomplished by means of an incorporated index pointer, which can be used on cutters having cutting or clearance bevels, or a combination of both, also on round or square heads of various diameters. The index pointer is mounted on a hinge, and is so arranged that a spring causes it to drop into position automatically, as the cutterhead is turned on the grinding arbor.

The special double-end Greenlee machine used on a large amount of work in the Kroehler plant has been made more versatile than the average unit of this type, through incorporation of more than an ordinary amount of equipment. In addition to the 5 h.p. tilting saw

Greenlee universal spindle gang borer in use in the Kroehler plant. Note the stop clamped to the machine table at the left, plus arrangements provided for locating the stock widthwise.



Parts with edges which combine straight and curved portions are being rapidly sanded on the Mattison oscillating belt edge sander in the Kroehler plant.

One of the nine Mattison straight-edging saws ripping short stock.

spindles with which the machine is fitted, allowing material to be equalized with either square or beveled cuts on the ends, it is equipped with two 5 h.p. lower cope spindles; also with two 5 h.p. lower horizontal tenoning units.

An interesting phase of machines of this general type is the ease with which they may be utilized for trimming and cutting frames and other sub-assemblies, in addition to the large amount of single-piece work processed through them. Their ability along this line often makes them highly convenient when processing and sizing panel-on-frame and similar work. This is one type of work handled to high advantage at the plant under consideration.

Sanding Surfaces and Edges

Sanding facilities are important at the Kroehler plant, as in any progressive furniture factory. One important aspect of the sanding regime is the facility with which various types of relatively short parts are handled on a Solem endless-bed four-drum unit. One of the illustrations shows this machine in operation on dovetailed drawer fronts. Considerable other efficient sanding equipment is in use at the plant, including a modern Mattison edge belt sander.

On this machine, any piece of straight or curved-edge work that can be supported on the tables, or held free-hand against sanding rolls, platen, or specially-shaped forms, can be accurately finished. Such a unit has far greater capacity than sanding drums or spindles used in some places. The abrasive belt is provided with an oscillation mechanism; the oscillating motion given the belt by this arrangement eliminates scratches. Such a unit is highly versatile. Even ornamental square and octagonal turnings can be perfectly sanded on stationary forms in a small part of the time that would be required for sanding by hand.

While pictures of conveyors do not appear with this article, they are nevertheless in use in various departments where they lend themselves to economy of operation.

Furniture produced in the two Bradley plants is not shipped over any great distance. The fact is that furniture manufactured here is restricted relative to the area served, going to the retail furniture trade in the midwestern states immediately adjoining. According to Works Manager C. B. Kroehler, only about 15% of production from these two plants is shipped by freight. The balance is directly delivered to retail dealers by a large fleet of trucks, owned by the Kroehler Mfg. Company and operated for this purpose exclusively.

Thank You!

In addition to the data furnished by the Kroehler Manufacturing Co., Bradley, Ill., we appreciate the co-operation given by: Black Brothers Co., Mendota, Ill.; Mattison Machine Works, Rockford, Ill.; Greenlee Bros. & Co., Rockford, Ill.; and the Solem Machine Co., Rockford, Ill.

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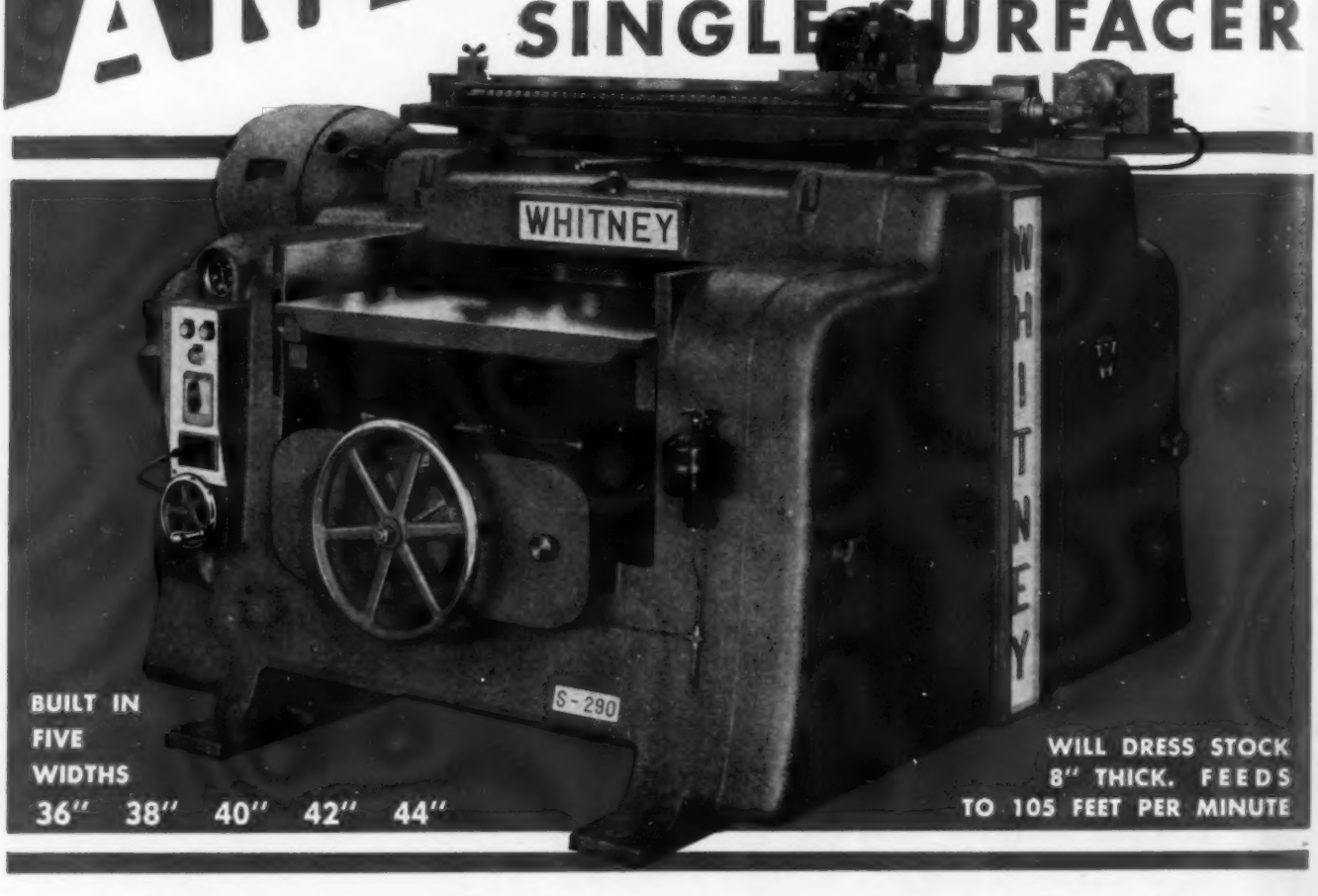

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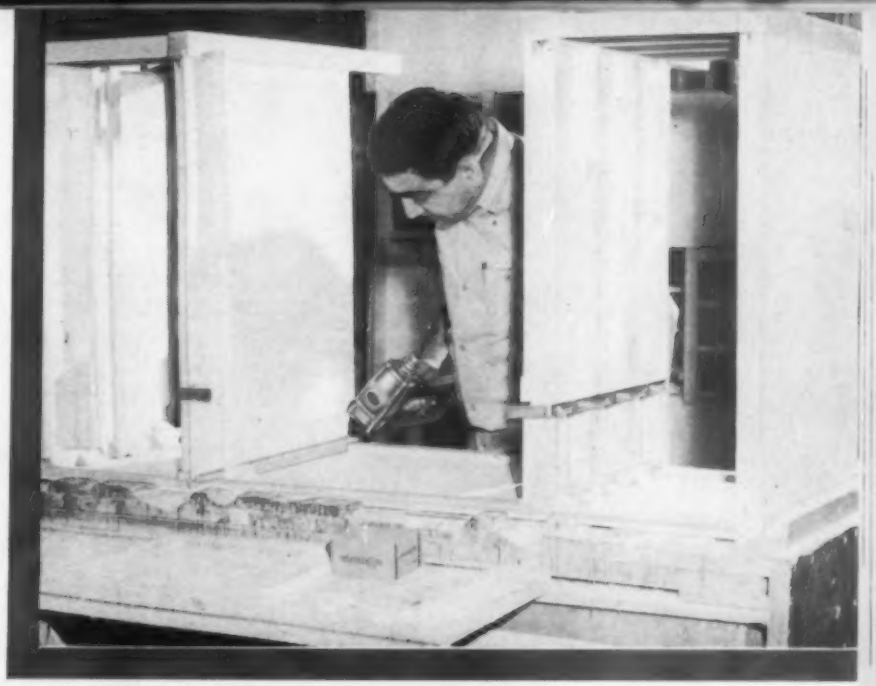


New air stapler made by Spotnails, Inc., facilitates the assembly of desk components in areas that once could not be reached with such high speed equipment.

By
Thomas A. Dickinson

CABINET MAKING AT CAPITOL DESK COMPANY

▶ Capitol Desk Company of Los Angeles is an outstanding example of a woodworking firm that has attained a high degree of production efficiency, despite a current shortage of skilled labor. Success is due in part to specializing in the manufacture of a few closely-related articles—namely, tables and desks of the types used by school teachers and office workers in the more conservative business organizations.

According to Forrest Harold, general manager of the ten-year-old company, such products require little that is unusual in the way of design details; but, in addition to being exceptionally durable, they must be saleable at highly competitive prices.

The significance of the latter statement is indicated by the fact that Capitol is now able to make more than 1000 desks and tables monthly with a crew of 20-25 workers in a 20,000 sq. ft. plant.

Specialization has made this high level of productivity possible. First, by permitting the use of the most efficient types of machines and tooling. Second, by enabling the company to break down manufacturing operations to the point where all jobs are simple enough to be handled by men with little or no previous experience as woodworkers. Ability to use unskilled labor is a great asset for almost any small factory in the Los Angeles area at present; for, due to the mushrooming growth of major defense plants throughout Southern California, skilled workers of nearly all types are in a position to demand substantially higher wages than some companies can pay.

Because its products must meet exacting quality requirements, Capitol buys some of the more expensive raw materials—including North Carolina plywoods and such domestic hardwoods as tupelo, gum, oak, walnut, alder, and ash.

Among the more important facilities used in processing the latter materials at present are five Roger belt sanders, a Dodds dovetailing machine, a Supercraft double trimsaw and chopsaw, four Davis & Wells units (including a tablesaw, bandsaw, shaper, and jointer), a pair of standard Binks paint spray booths with Graco pumping accessories, plus Spotnailers for assembly.

Another notable unit is the Supercraft chopsaw, which was originally designed for use in metalworking plants. It serves the purpose of a mortising machine at Capitol Desk Co., and in this capacity it is producing as many as five cuts in one production operation.

To facilitate manual efforts, Capitol provides all of its workers with a standardized assortment of portable power tools—including screw drivers, drills, and polishers—made by Black & Decker.

Both adhesives and mechanical fasteners are employed in the assembly of desk and table components. Where adhesives are specified, the company generally prefers a cold-setting polyvinyl glue—use of which creates no mixing problem or fire hazard. However, the setting action of polyvinyl bonding agents is so rapid that

Pneumatic Spotnailer with new extension nose. Tool saves time in assembly of drawer components with relatively inaccessible corners.

Standard Spotnailer is used to apply edge band to table top. Operation takes about one-third of time required if a conventional hammer and nails were used.

where it is not possible to use a spreader Capitol often employs a cold-setting casein glue.

Arthur Fareshetian, Capitol's production supervisor, claims there is no difference in the quality of joints made with casein and polyvinyl adhesives—from a practical point of view, at any rate—since no glue joint produced by the company is yet known to have failed.

Where mechanical assembly work is indicated (for example, in applying edge bands and drawer runners), Capitol now employs three pneumatic and two manual staplers and pinners made by Spotnails, Inc. According to Fareshetian, these tools are probably the biggest money savers in the plant because:

(1) They save about two of every three hours that would be needed to produce assemblies with conventional hammers.

(2) They make it unnecessary to bore hardwoods before they are nailed, and also eliminate the need for supplemental nail-setting operations.

(3) They make it virtually impossible for a tired or careless employee to damage either a workpiece or his own fingers.

Capitol does no turning, since little work of this type is essential to the manufacture of desks and tables—and since it is economically practical for the company to buy turnings from other shops.

Where cutters are specified for intra-plant fabrication, the firm uses almost equal quantities of steel and carbide tools.

In finishing assembled desks and tables, Capitol now applies more or less conventional wood stains, seal coatings, and clear lacquers with standard pneumatic spray guns in the aforementioned booths. However, in view of favorable reports on newer production techniques, the company is presently contemplating the possibility of using hot-spray finishing equipment. • • •

A Custom Woodworker Evaluates Tenoners

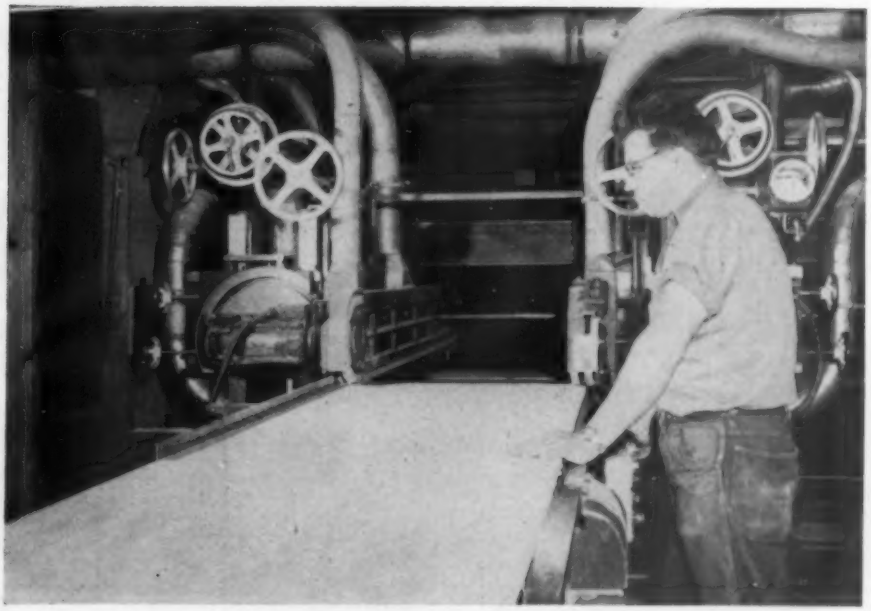
By R. H. Ebenreiter, President
Ebenreiter Woodworking Co.

The nature of the architectural woodworking and millwork industry, with the almost complete absence of long production runs found in sash, door, furniture and plywood industries, has caused many producers to overlook the value of using double-end equipment.

Perhaps this restricted thinking is due to over-emphasis by advertising people associating double-end tenoners with long production runs only, and unintentionally creating a feeling that lower unit costs and savings result only from large quantities run on one setup for relatively long periods of time. This line of thought has not held true in our firm.

We are an architectural woodworking firm, producing a wide variety of relatively short-run custom cabinet and institutional millwork, centering our operations around a Jenkins double-end tenoner. We had always recognized the advantages of being able to do double-end cutoff, tenoning, coping, and dadoing work in a single pass, feeding stock continuously. But until it was made apparent that our type of business would profit from a tenoner, we, too, were uncertain.

Realizing that long runs might never be part of our operations, we purchased our tenoner on the basis of quick easy setup and change over; a more uniformly accurate product; elimination of separate



Feeding large plywood panel to Jenkins double-end tenoner for trimming and tonguing prior to edge stripping at Ebenreiter Woodworking Co.

machine operations; and striving for lower total costs. After two years of operation, under carefully kept performance records, we find the machine has brought us many advantages over and above those contemplated.

Combine Job Operations

For example, there are many instances where bookcase or cabinet shelves and wall dimensions were too wide to run on matchers and molders, requiring them to be jointed-off, one edge at a time, one piece at a time, then transferred to a table saw with dado cutters for grooving. Now we run the stock from the planer through the tenoner, trimming, working the edges, and dadoing all in one pass.

In edge stripping of large plywood panels, we can trim, and tongue or V-groove both edges at once, and lay in the molded strips. Drawer fronts and sides can be sized, the long dovetail put on with tenon heads, and grooved at the rear, all in one pass.

In addition to eliminating the high labor cost of "one-edge-at-a-time, piece-at-a-time" operation, we obtained uniform accuracy and excellent quality. Differences in abilities between operators on different machines, or variations between pieces done by the same operator, are eliminated. Cuts and joints are uniformly accurate, and assembly of parts is easier and faster without reworking.

Less Time

We are convinced after two years of tenoner operation that even with a wide variety of relatively short runs on each setup, the total time necessary to setup the tenoner and run pieces quickly is far less than that required for setting up a number of single purpose machines and hand feeding the stock.

From the day of machine installation, we have kept careful records. Time available has been allocated into:

Setup time
Maintenance time
Idle time
Running time

These records have proved to us that even with our frequent change-overs, our time figures are favorable beyond our expectation.

Through lower costs, we can and do pass savings on to our customers, putting us in a very favorable competitive position. At the same time, we can successfully undertake a wider range and larger volume of work through increased production facilities without overtime rates. Diversifying our products has done much to eliminate seasonal variations.

Educational Helps for Operators

As frequently as possible we like to send all of our machine operators out with field men to the job site. Discussions of job requirements with both customer and field men result not only in new and beneficial ideas, but give the operator a feeling of personal responsibility for doing the best job he can. Trips to other woodworking plants in the vicinity provide new operators with new ideas and approaches in machine methods which are of material assistance in our operations.

Ebenreiter Woodworking Co., Sheboygan, Wis., manufacturer of architectural woodwork and institutional millwork.

PRODUCTION UP 100%

THIS COULD BE YOUR STORY!

COSTS DOWN 40%

with new FAY & EGAN No. 969–20" x 8" four-side Planer, Matcher and Moulder

". . . we were using four separate machines to process our church seats. One machine was used to rough plane the stock, a shaper for nosing the front edge, a jointer for beveling the back edge and an outmoded matcher for scooping the contour of the seat. The new machine we purchased from you does all four of these operations at the same time.

"We are now turning out twice as many pieces per day and have also cut production costs by more than 40%."

Roy P. Stonesifer

Superintendent, LEIRD Manufacturing Co.

Write today for complete information and prices!

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PRESENTING . . . .

Northeastern Red Oak

By N. Nash
Great Eastern Lumber Co.

COMES THE REVOLUTION!

Woodworkers of America, awake! NERO (north eastern red oak) is in full rebellion. "Beware!"—or rather, "be aware" of what is happening! NERO is fed up on being stepped and trodden on in the form of flooring, or pounded mercilessly in the shape of railroad ties! NERO is on the march, and vigorously demands to be lifted off the floor and be given a place of honor in your homes, offices and in public buildings.

Are the lofty aspirations of NERO justified? Can the ambitious dreams of NERO be realized? In short, and putting it bluntly, is NERO as good as APPRO (Appalachian red oak) or SOURO (southern red oak)? To provide an answer to these burning questions without fiddling around the bush, is the purpose of this article on NERO!

Organizing a self-appointed Society for the Prevention of Cruelty to NERO, your eager investigator consulted the Oracle of Upper Darby, Pennsylvania (sometimes known as the Northeast Forest Experiment Station) and requested the past record and file on NERO, which might be helpful in the preparation of this article. Usually requests of this nature produce avalanches of leaflets, brochures, technical bulletins, charts and curves.

However, in this case, Mr. Fred C. Simmons, high priest technologist at Upper Darby and whose middle name is "Cyclopedia Lumberrica," reluctantly confessed that no specific literature was available on NERO. (If any forestry students are reading this article—and what forestry student worth his weight in sawdust does not read this magazine regularly—here is an idea for a thesis.)

The best thing Mr. Simmons could suggest was to ask the De-

"Sorry, there is nothing in our archives. Possibly some student will write a dissertation."

partment of Agriculture in Washington, D.C., for brochures on red oak. But once again, our search for "the facts, just the facts, Ma'm," was met by an official silence. The red oak brochure, published originally in 1945, was out of print.

Thrilled and intrigued by this fast developing mystery drama, and in a moment of recklessly, wild, extravagant abandon, we sent $2.00 to Washington for a copy of *Wood Handbook,* No. 72 (1955 edition), which is considered the "bible" of the industry. Indeed, on page 511 of the index was a listing for northern red oak. Breathless with excitement, we discovered on page 18 this appropriately overwhelming statement:

OAK (red oak group)

Among the numerous species of red oaks in the United States, 10 have considerable commercial importance. (1) northern red oak (Quercus rubra), also known as eastern red oak, grows in the eastern half of the United States to the lower Mississippi Valley, Florida, and the Atlantic Coastal Plain . . ."

Wanted: New Cliches

One need not be a professional literary critic to recognize immediately that this gem of an opening statement could have been written only by one man. Namely, the inimitable and unique Sam "Include Me-Out-Of-It" Goldwyn. It is also obvious that the above excerpt hardly bears the stamp of approval of the Southern Lumber Manufacturers Association who would rather start another Civil War before permitting their oak to be labelled (ugh!) "northern."

Having lost his sense of direction, Mr. Goldwyn apparently also lost his writing assignment, for in subsequent pages the book talks only about northern and/or southern oak. Unfortunately, this further deepens the mystery, because no geographical definition was given for these terms.

Alone at Last

Suddenly we realized that in preparing this article on NERO we were embarking on a lonely voyage over unchartered seas. The situation, to say the least, was full of contradictions. Here, indeed, was a classic example where theory and practice were latitudes and longitudes apart. The books and references talk mainly about southern and northern red oak. Yet, anyone traveling the woodworking circuit will soon discover that the men in the mill are more precise. They talk about three kinds of red oak—northern, Appalachian and northeastern.

Therefore, in order to be as accurate as possible, when we speak of NERO during the remainder of this article, we refer to the red oak produced in the Adirondacks and adjacent territories in the eastern part of New York state.

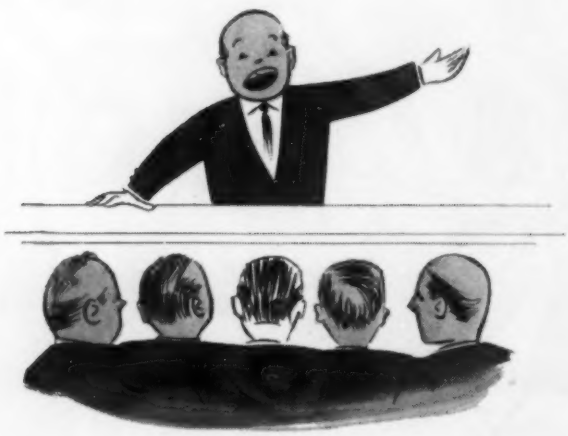
Girls Will Talk

According to most blond, brunette and redhead secretaries, all husbands in the U.S. suffer from being taken for granted and not being properly understood. Yet, nobody has a better right to complain than NERO. For generations, NERO performed so superbly in its role as "Flooring of Distinction," that it fell into the rut of being stereotyped in this part. Like the Hollywood moguls who refuse to let Marilyn Monroe play in the "Brothers Karamazov," lumbermen and woodworkers were so satisfied with NERO for flooring, that it never occurred to them that NERO was capable of bigger and better things.

Destiny's Finger

The hour of reckoning, so long delayed, finally arrived. In 1955, the solons of the National Hardwood Lumber Association met in Chicago and decreed at the annual convention, that whereas, notwithstanding, and henceforth, "sap" should no longer be considered a defect in red oak. Lumbermen were jubilant and elated, and that evening they celebrated the successful passage of this motion in a manner never again matched in the annals of the trade conventions.

However, one man's poison . . . The nation's red oak consumers thought the passage of this motion signalled the end of the world! Spreading ashes upon their heads and girding their loins in sackcloth, they huddled dejectedly in corners,



"Sap is not a defect!"

heads in their hands, staring blindly at the floor beneath their feet. Fortunately, there was no wall-to-wall carpeting. Therefore, the floor was able to stare back at them with a twinkle in its eye, as if to say, "Don't worry, friend. I, NERO, can bring you deliverance. With me the whole question of 'sap' is purely academic. For back where I come from, oaks are O A K S and the 'sap' which the trees develop is non-existent for all practical purposes."

That is why, despite the colossal vacuum of official information, astute businessmen throughout the country, whose tastes in music lean towards the lyric clinkle-clankle-clinkle of cash registers have enthusiastically carried NERO over the thresholds into their factories for better and—and they never had it so good!

Back to School

Years of experience on the part of flooring manufacturers have shown that there are no particular problems in drying NERO. Your nearest congressman or Forest Products Service Bureau can easily mail you the kiln schedules. But, taking a second look at the flooring manufacturers' operations, we may be somewhat surprised to discover that they use intricate and efficient woodworking machinery. Producing flooring is by no means a simple task, and in fact, it is not much different from manufacturing tables, chairs, etc.

Those who made the pilgrimage to the flooring factories returned to their own woodworking shops more enlightened and wiser in the ways and uses of NERO. Soon their newly found wisdom also made them richer. All over the country, NERO's goodwill ambassadors can now be found making a proud name for themselves in the form of regular, church, school, and institutional furniture, architectural trim, picture frames, moldings, novelties, plaques, trucks, boats, etc.

The Dick Brothers and one of the beautifully carved lecterns made by them

I Swear to Tell

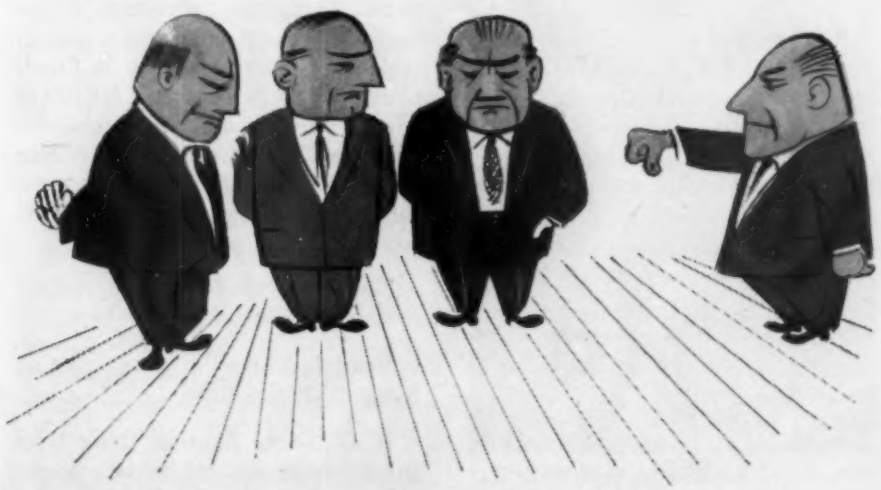
Oh, we could marshall enough character witnesses for NERO to fill every page of this month's issue of WOOD WORKING DIGEST. However, when our loyal and satisfied advertisers heard of this plan, they furiously refused to give up their space, even for a single copy, and the editor was forced to abandon this whole idea—reluctantly, we presume.

When the mountain did not come to Mohammed, the prophet —we are told—went to the mountain. Inasmuch as we cannot bring this mountain of evidence to you, Mr. Reader, we shall do the logical thing and take you along on one of our field trips to meet and interview a man who has a mountain of knowledge and decades of experience in all phases of the woodworking industry. His given name is Richard G. Dick, but the industry calls him: "Mister Woodwork." He is the senior partner in the firm of Dick Bros., Worcester, Mass., which will soon be celebrating its 100th birthday. If it's made of wood, these men can make it, and in all likelihood, they have made it at some time or another.

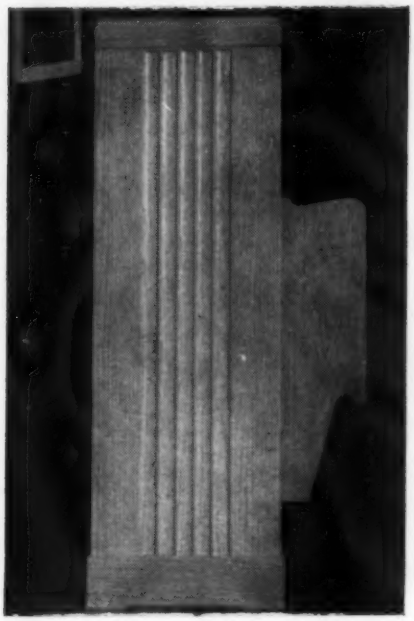
Because Dick Brothers is basically a custom architectural woodworking plant, they hold no brief for one lumber specie over another. They love all their children, and they are working with every kind of hardwood and softwood available on the American market. Therefore, the opinions expressed by Mr. Dick are not exclusively his own, but they reflect the impartial judgment of all those woodworkers who have sawed, planed, glued, stained and finished NERO into objects that combine splanchnological strength, kyphotic beauty, and ready saleability. *(We don't know either what he means. Probably it's good*—the editor.)

NERO on TV

Following is an exact, dramatic



Everyone is not happy with new ruling.



Example of pew end.

Hand sanding a pew at Dick Brothers.

transcript (plus stage directions) of our visit at the Dick Brothers Company. For the sake of brevity we are omitting platitudes such as: "Please sit down." "Where?" "On the chair." "Thanks." "Don't mention it."

DRAMATIS PERSONAE

Richard G. Dick	*N. Nash*
August W. Dick	*U. Reader*

Act I, Scene I

U. Reader and N. Nash enter the office of Mr. R. G. Dick.

R. G. Dick: Good afternoon, Mr. Nash. Haven't seen you in quite awhile. Whom did you bring along today?

Nash: Glad to see you looking so well, Mr. Dick. I'd like to have you meet . . .

R. G. Dick: Don't tell me, let me guess. You have been shooting your pen off so much in public, Mr. Nash, that you are now afraid to travel without a bodyguard.

Nash: Thank you for reading my stuff, but you guessed wrong. This is Mr. Reader, a man who is intelligently interested in progress, a man who is trying to keep well informed, in short, a man who religiously reads WOOD WORKING Digest, including the ads.

R. G. Dick: Oh, do come off it, Nash. Your editor is not listening on the intercom. Welcome to Worcester, Mr. Reader.

U. Reader: I'm happy to meet you, Mr. Dick. I have read about you. Last year Mrs. Reader and I toured the country and we came across quite a few of the public buildings for which you made the furniture and trim.

R. G. Dick: Am I to infer then that you came all the way just to get my autograph?

Reader: Not at all, Mr. Dick. I came here to ask you some personal, straight forward and leading questions—from one woodworker to another.

Nash: We came here, to you, Mr. Dick, because we think you are one of the ablest, most experienced, and most skillful craftsmen . . .

Reader: You can see what I am up against, Mr. Dick. These combination lumbermen-poets sometimes can get so carried away by their own eloquence that it is difficult to tell without a guide light where forestry ends and fiction begins. Our friend, here, Mr. Nash, has been telling me about NERO. Occasionally he seems to be making sense, and that is why I am here to check and verify some of his statements.

R. G. Dick: To tell you the truth, Mr. Reader, NERO is a subject I do not really care to talk about.

Nash: But . . . but, I thought you were on my side, that's why we came . . .

R. G. Dick: And I thought you were just going to sit here quietly and take notes like a good reporter. Another thing I want to be clearly understood—I am on nobody's side! In my business I usually have to take orders from the architects, and I have to give them what they want —anything from A to Z.

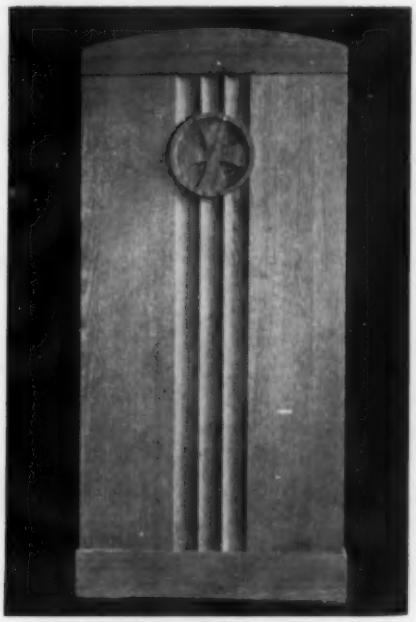
Reader: Am I to understand then that you do not like to work with NERO?

R. G. Dick: That's not what I said. I just don't like the terminology "northeastern red oak." If I were a lumberman here in our northeastern territory, I'd try to do something about that RED oak name. Botanically speaking, it belongs in the red oak family, but in appearance and color it is much more like white oak. Our NERO is free of streaks and other discolorations, and I would say that its color is sort of off-white, and very even throughout, because it has no softwood to speak of.

Nash: But that's exactly what I told you earlier.

Reader: There he goes, quoting himself all the time.

R. G. Dick: Another thing is of great importance to me as a practical woodworker who has to watch



More intricate pew design.

Shaped pew end and design.

his costs. NERO's texture is very uniform and straight grained and does not vary much in individual or subsequent shipments of lumber. It is hard, heavy and highly shock resistant and works well in the mill, thus increasing our production and efficiency.

Act I, Scene 2

Half an hour later. August W. Dick is leading the inspection tour through the mill.

Reader: If I am not being too inquisitive, could you tell me what you use to make this lumber so lustrous?

Gus Dick: Why, nothing. What you see here is the raw lumber which has only been planed. This NERO has a natural, unique satin-like luster to it which comes out in the machining operation. Also, you will note that the color is very light and uniform.

Reader: Unbelievable! You're sure now, you are not showing me white oak?

R. G. Dick: That's right! One has to step quite close to see the splashier grain to realize that this is, indeed, red oak, and not white oak. It has none of that reddish tint which is usually associated with red oak.

Reader: (examining a pew) I see you are going to a great deal of trouble to match up the grain pattern of the boards.

Gus Dick: It's not much trouble, really. It's the natural way this NERO lumber comes through with a very uniform grain pattern which makes it easy to match the boards. We think this makes for a better, more pleasing looking final product.

Nash: This is, of course, due to the fact that our climate and soil . . .

R. G. Dick, Gus Dick, Reader: (in unison) "and soil conditions here in the northeast are conducive to slow, steady and uniform growth."

R. G. Dick: Don't you ever get tired of singing these commercials, Nash?

Reader: From what you've been telling me about the texture of NERO I don't suppose you have much trouble nailing?

Gus Dick: None. NERO holds the nails very well and there is no undue amount of splitting.

R. G. Dick: All in all, we treat NERO same as we do our other northeastern species—beech, birch, maple, etc.—during the machining operation, and we do not even have to change the speeds on our equipment. We can do practically anything with NERO: routing, mortising, and boring are no problem.

This altar was particularly difficult to make. Note intricate work.

Sanctuary stalls at St. Mary's Church, Winchendon, Mass.

Just take a look at these clean drill-outs.

Gus Dick: Over here we do our shaping and turning.

Reader: These look like pretty difficult pieces to sand.

Gus Dick: No more so than any other red oak.

R. G. Dick: Let's show them our carving department now. We are particularly proud of it.

Reader: (looking around, very impressed) I can well understand it. But do you really expect me to believe that all this detailed, intricate and minute work on this altar and these figures and eagles were carved out of NERO and not white oak?

Nash: Let me prove it to you in a scientific manner, Mr. Reader. You know, of course, that microscopic examination has shown that the pores of white oak are clogged with a substance called "tylosis," which is not present in the pores of red oak. Therefore, to remove any doubts you may have as to the veracity of the Dick brothers, I am going to light a cigarette and blow the smoke through this 6' long piece of red oak—lengthwise! Watch carefully!

R. G. Dick: No smoking in this shop, please, if you don't mind, Nash!

Nash: (aside) Drat!

R. G. Dick: I know it sounds almost incredible, but what you see here is in fact red oak. Of course, soft textured white oak has for centuries been the preferred wood for

Altar rail at Sacred Heart Church, Pawtucket, Rhode Island.

Pulpit at Sacred Heart Church.

carving, but during the last few years it has become more and more difficult to get white oak, so now we are using red oak whenever we cannot get white.

Gus Dick: When we get a regular load of NERO lumber in, we select the clearest, straightest grain, and soft textured boards and put them aside for our carving department. Would you like me to show you our stock?

Reader: No, thank you, that will not be necessary, I believe you. I'd much rather stand here awhile and watch the men carve. These multiple, repetitive carving machines always fascinate me. If I should become hypnotized, just pinch me and I'll wake up.

Gus Dick: Would you like to see our finishing operations?

Reader: Certainly, and I do hope we're not taking too much of your time.

Nash: If you'll excuse me, these machines give me a headache. I think I'll go back into the office and wait for you there.

R. G. Dick: Pull yourself together, man, we're almost through.

Reader: There is one thing I almost forgot to ask you: Do you find it difficult to glue NERO?

R. G. Dick: On the contrary, the open pores make it easy to force the glue into the pores.

Gus Dick: It's so easy, in fact, that the boards can be glued directly from the straight line ripsaw instead of having to buzz plane the joints or using a tongue and groove construction. Well, here we are. This is where we do our finishing.

Reader: Why, for goodness sakes! I have never seen unfinished furniture have such a finished appearance.

R. G. Dick: Well, Nash, we're all waiting to hear your commercial about the soil and the climate.

Nash: If you don't stop teasing me, I'll light a cigarette right here in the finishing room, and we'll all take a trip to the moon!

Reader: I am not going to ask you any questions here, because I don't want you to think I'm after your formulas, but any information you care to volunteer regarding the finishing, will be greatly appreciated.

R. G. Dick: There are no great secrets here. It is not at all difficult to finish such nice looking pieces. Both acid and water stains work very well, and generally speaking, it is better to apply a coat of sealer first before putting on the filler.

Gus Dick: Now, if you are using oil stains, it is better to add the filler directly to the oil stain and then apply either shellac and varnish or sealer and lacquer.

R. G. Dick: As you look around here, you'll see that we use NERO for quite a variety of articles. Here are some library tables, railings, and there is some paneling for a study. These particular chairs re-

Sisters' stalls at Rose Hawthorne Lathrop Chapel, Fall River, Mass.

quired bent parts, and NERO is, of course, a very good bending wood. I do not know what sort of manufacturing you do, Mr. Reader, but if you are using red oak already, or are considering using it, I don't see why NERO wouldn't do.

Reader: I wish my associates could have been here. When I get back home, I am afraid that they may not believe me.

R.G. Dick: Let's go back into my office, and I can give you some pictures which you can take back to your associates.

Nash: Good idea! *(Leads the way.)*

Exit Nash, followed by Gus Dick. However, Mr. Reader is tarrying deliberately and holding back R. G. Dick.

Reader: Just one more quick question, Mr. Dick, I didn't want to ask it in front of Nash. How is the price of NERO as compared with other red oaks?

R. G. Dick: A lot cheaper. In fact, I think it's a steal!

Act I, Scene 3

R. G. Dick: (seating himself at desk in office) Here are the pictures I promised you. If you are interested and have the time, you might like to visit one of these churches on your return trip.

Nash: I'll see to it, because I want Mr. Reader to realize and understand that NERO is particularly suitable for use in public buildings and especially in places of worship. NERO conveys strength, courage, endurance, beauty, dignity . . .

R. G. Dick: And I'm glad to see that your headache seems much better, Nash.

Reader: Talking about pictures, that photograph there on the wall—it seems very familiar.

R. G. Dick: A lot of people who come to my office have the same feeling. It's quite possible that you may have seen it because it has appeared in so many papers. It's actually a picture of the panelings in the rector's office at Holy Cross College.

Gus Dick: My brother is being very modest. The reason it has received so much publicity is because it is considered a true carving masterpiece. It is perhaps his best independent work, and Holy Cross College presented him with an honorary Master of Arts degree for it.

Nash: It is . . .

R. G. Dick: No, Nash, it isn't made of NERO. Maybe the next one will be.

Nash: I hope so, I really hope so!

The curtain falls on R. G. Dick, Gus Dick and Reader looking very satisfied while Nash is still depressed because the carving is not made of NERO.

Pictures appearing in this article have been loaned to us by the "Catholic Free Press," and the Dick Brothers.

The September issue of Hitchcock's WOOD WORKING DIGEST will have another hardwood story by Mr. Nash.

As these articles appear throughout the next six months, we'll be glad to hear from you. Do you like this method of presenting American hardwoods? What woods would you like to have us describe?

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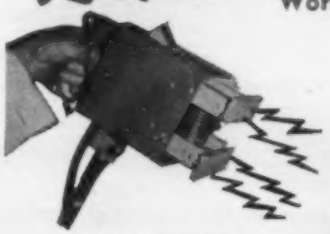

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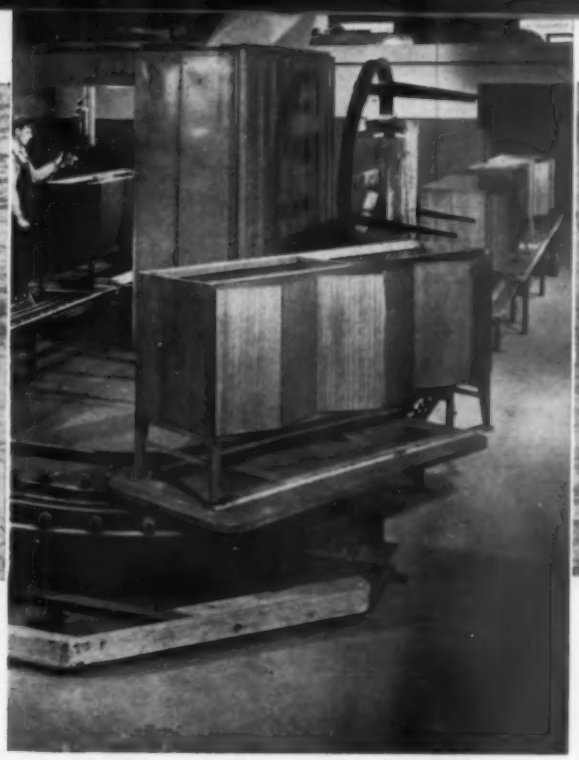
finishing section



- When is the woodworking industry going to be able to measure depth of finish, gloss, etc., as accurately as is being done in other industries? To what extent is it necessary to achieve this type of accuracy? This question, or ones like it, comes to us rather frequently. What is your answer?
- Coated abrasives for the woodworking industry are constantly undergoing improvement. There will be an article on this within the next several months. Can coated abrasives speed up further automation in our industry? Some think so.
- How long since you, or some of your men, attended a paint finishing school or a trouble-shooting course? This may appear to be a question-and-answer column this month, but final appearance counts heavily in selling wood products and we should constantly work toward improving our finishing methods.

- *Hand Sanding For Detailed Work*
- *Airless Spraying in Boat Manufacturing*
- *How to Handle "Pitchy" Woods*

- Tests conducted at the Forest Products Laboratory, Madison, Wis., over a period of 12 years, prove the value of painting. The laminated timbers painted with two coats of white lead paint before exposure and repainted twice, were practically free from deterioration.
- Next month, August, there will be a report on new colors and shades seen at the Chicago Market. The trend toward warm brown tones seems to have gained momentum in the last few months.

HAND Sanding For Detailed Work

By
Carl Chekouras

Fig. 1. Using belt sander.

Sanding machines cannot do all the work. If a machine could perform inspection of parts as well as a skilled operator, hand sanding would not be as important as it is to quality products.

Although automation has proved itself in many woodworking operations, we still depend on hand sanding for finer details. If a machine could be equipped with an eye that would be concerned with smooth edges or fine grain we could perhaps depend almost entirely on machinery for sanding.

The beauty of any wood product depends on its finish and design. These two factors, important as they may be, cannot produce beauty if the material is not properly sanded and filled. Material such as plywood or large stock may be sanded on machinery that performs the operation automatically. However, shaped products and many wood parts must be sanded on machinery that is controlled by the operator's hands and his judgment. Whether or not the product has been sanded correctly, ready for finishing, is his job.

Case goods parts are sanded on a belt type stroke sander which is manipulated by the operator. It is obvious that these parts could be sanded automatically, but the automatic sander does not bring out the features that can be produced by a skilled operator. One piece of stock may require more sanding than another and has to be judged by the operator.

Belt sanding in principle multiplies hand-sanding with machine speed. The raised grain is cut down, leaving the surface clean and smooth, ready for the finish to be applied, and showing the grain of the wood to the best advantage. The table travels on rollers and is easily moved to carry the work back and forth while the operator applies pressure to the sanding belt, using a block or pad.

One of the more advanced types of stroke sanders is the double belt sander which carries sanding belts of two different grits. The first belt would be used to sand off the veneer tape or do the rough sanding. The operator then can, without removing the stock, manipulate the sanding block over the fine sandpaper and produce the desired finish.

Sanding Belts and Blocks

For flat sanding, belts about 6" wide are generally the most practical. Paper belts are readily manipulated over the curved surfaces. For moldings and irregular shapes, flexible, cloth-backed belts are used, ripped to whatever width best accommodates the part being sanded.

The operator brings the belt into contact with the stock by applying the necessary pressure to the handblock or pad. His work is always in sight so he has control of the sanding and can produce the desired results. Blocks for flat sanding are made of hardwood. They are padded with thin felt, and covered with a frictionless material to minimize wear. For rough sanding on surfaces, handblocks can be weighted. There is practically no limit to the many ways in which handblocks and pads may be adapted for sanding irregular shapes and special jobs.

The belt sander sometimes is used for sanding moldings. To do such sanding it is usually necessary to equip the handblock with a profile block that insures the contact of the sanding belt to the molding being sanded. Because of the many different aspects of molding finishing it is necessary for the sanding machine manufacturer to supply

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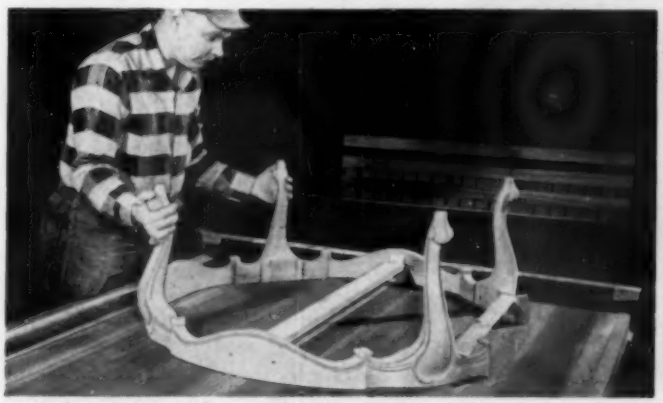
1 The Weiman Company, manufacturers of "Heirloom Quality" furniture, includes marble-top cocktail and lamp tables in their line. Fitting these tops is critical because the wood frames must be absolutely level before they are applied—otherwise the marble will crack. The Company formerly used hand sanding methods to level the wood, in a slow, costly operation.



2 A 3M Representative suggested that this customer switch to a bed sander using Grit #40 Three-M-ite Resinite Cloth Belts. Results: a perfectly level job every time and *sanding time cut 50%* with no wood burning. The Weiman Company has found that 3M Coated Abrasives *consistently* produce these results.

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Figure 2. On this type of belt sander, pressure and profile is controlled by the operator.

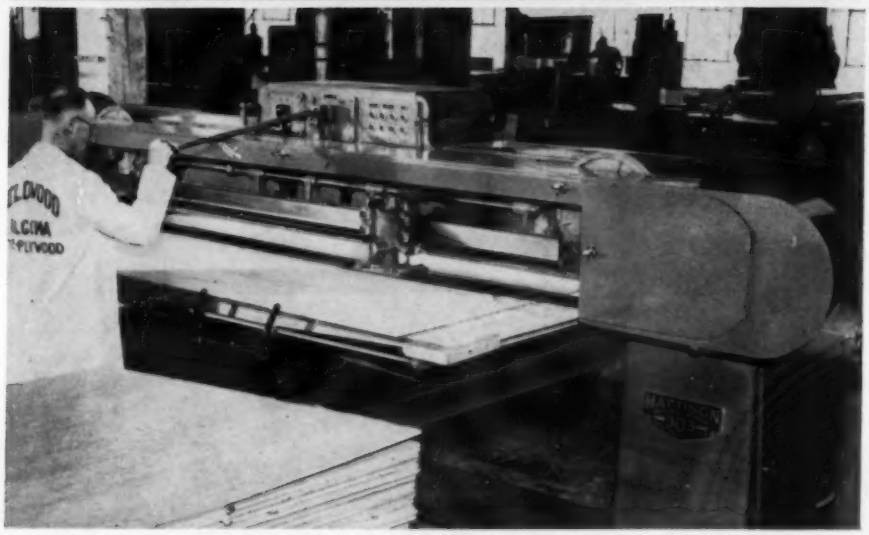


Figure 3. Sanding flush plywood door on belt sander.

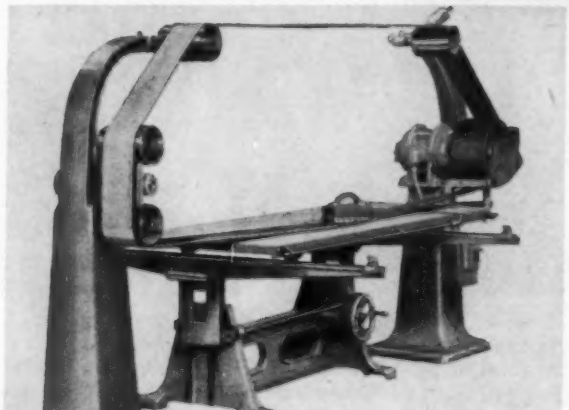


Fig. 4. Table adjusts to proper height.

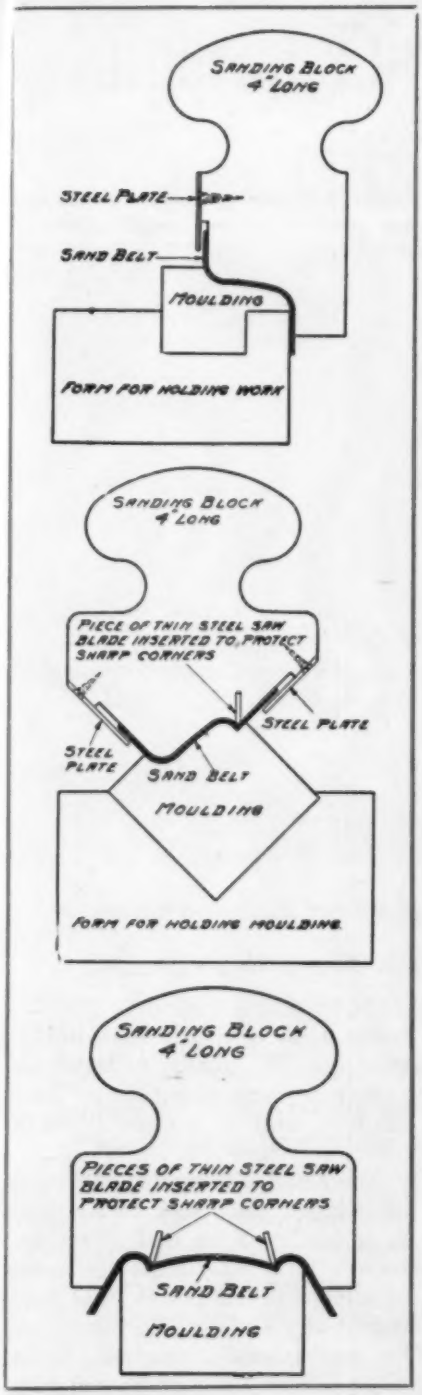
different kinds of machines for profile work. There are machines that are primarily used for the sanding of moldings. This machine is semi-automatic and could be considered for a high production job. However, it does not seek out the flaws as a hand operated machine would do.

How to Sand Moldings on the Hand Block Sander

With the belt-supporting standards set far apart, sandbelts achieve complete flexibility; and this lends a sensitiveness to the operator's touch which enables him to efficiently finish complicated moldings with all corners correct. In using the handblock belt sander for finishing complicated moldings, four important things must be carefully considered. The correct belt must be used; it must be of proper width for the particular molding to be sanded; the molding must be supported in fixed position on the table so the horizontal sandbelt will cover the profile of the molding with the least twisting; the hand-block must be accurately shaped and carefully prepared to insure against dubbed corners.

Sanding belt manufacturers have developed a material for use with handblock molding sanders and edge molding and scroll sanding attachments. The belts have pliability, as well as straight weave and minimum bulk, combined with fast cutting properties. These characteristics are all very essential for a belt being used on moldings having sharp corners or small beads. When buying belts, be sure to tell the manufacturer the character of your moldings and the type of machine used.

In ripping belts to width, allow about ¾" more than the measurement of the profile of the molding, so the belt will ride easily in the slots of the handblock. Many moldings have more features than can be covered by one width of belt. Some moldings require a belt as narrow as 1" for reaching some



Figures 5, 6 and 7 (from top to bottom). These are types of formed hand blocks.

features and a 3" or 4" belt for others. In such cases, two or more operations are required. Stock handling can be reduced if a double belt model handblock molding sander is used. On such machines the two belts are independently aligned. Two different widths can be successfully employed on the same machine.

After the belt is ripped to width and spliced, it should be carefully creased throughout its length at the point where it will follow a sharp angle in the pattern. This is accomplished with the belt running on the machine, by holding a blunt instrument against a simple gauge, which marks a straight line in the belt. Folding along the line gives the desired crease, and the belt will follow the sharp corner without dubbing it.

The success of sanding complicated profiles is insured by the care with which the handblocks are made. Belts may be just right—of correct width and flexibility; moldings may be properly supported under the belt; yet, unsatisfactory results may be obtained if the shape of the block does not conform exactly to the profile of the moldings, or if provision for protecting sharp corners is slighted, or if slots when required, are not carefully arranged.

Fig. 8. Combination sanding machine.

In making blocks, select well-seasoned hardwood, preferably

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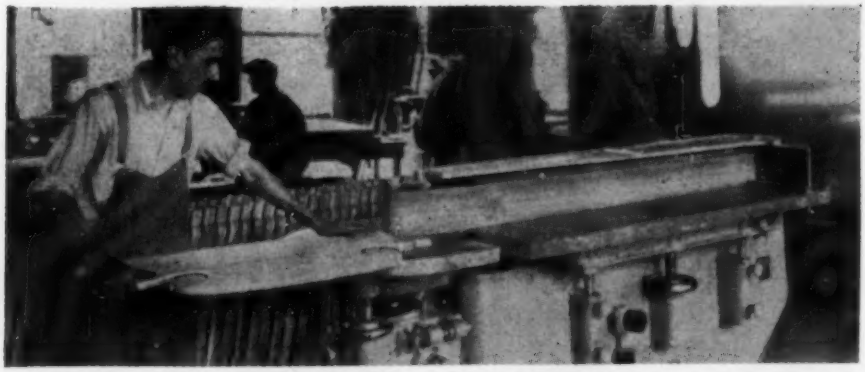

Figure 9. Showing contour edges being sanded against small diameter roller.

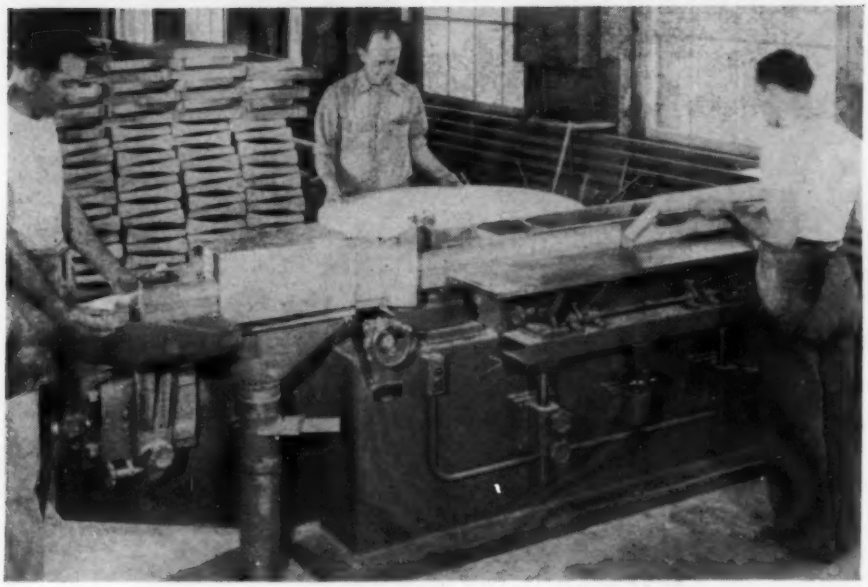

Figure 10. Three sanding operations being performed at the same time on one machine.

maple, bandsaw it carefully to fit the profile of the molding; then polish it to a smooth surface. Pieces of saw blade should be inserted wherever there is a sharp angle or corner to protect the block and keep its corner from becoming rounded. Where a corner is to be kept sharp, it is necessary to provide a slot that can be made as indicated in Figures 6 and 7. The side of the slot next to the sanding side of the belt should be lined with a piece of steel to prevent the belt cutting the block.

Edge Sanding

Assuming that the surfaces of the product have been sanded either automatically or by a hand sanding method, it becomes necessary to produce a good finish on the edges. In the case of small quantities of parts, the shop sometimes employs the use of a disc sander in connection with either a belt or spindle sander. (Figure 8).

Figure 9 shows an operator sanding the edges of a wood part, but it is noticeable that he could not sand within the spiral scroll on the type sander he is using. He would then employ a spindle type sander that has sanding sleeves of two very small diameters that would fit into the scroll for sanding the edges. An oscillating edge sander will accurately finish any piece of straight or curved edge work that can be supported on the tables or held by hand against sanding rolls, platen or specially shaped forms.

This type of sander has several times the capacity of small sanding drums or spindles. The abrasive covers a long surface and naturally retains its sharp cutting properties through an exceptional amount of sanding. Various sizes of sanding rolls, special forms for shaped work, and non-revolving steel sanding spindles may be used on the left end. The platen may be removed and special forms attached between the pulleys for sanding pieces having rounded edges.

The belt travels with an oscillating motion which eliminates scratches. The quality of finish obtained is even superior to hand sanding, and is accomplished in much less time.

There are so many different ways of bringing the work to the belt, as it oscillates up and down and rapidly travels around rolls, forms, or along the flat platen, that practically any and all edge work can be conveniently reached. Ornamental square and octagonal turnings are properly sanded on stationary forms in a fraction of the time it takes by hand.

The efficiency and life of a cutting tool depends on the nature of the tool, work it is doing and the speed at which it is traveling. A sanding belt is a cutting tool. It is subject to these laws. In building belt sanding machines, the speed has been based on the experience and recommendations of abrasive manufacturers. As abrasives have been improved, speeds have been increased to maintain maximum performance and belt life. • • •

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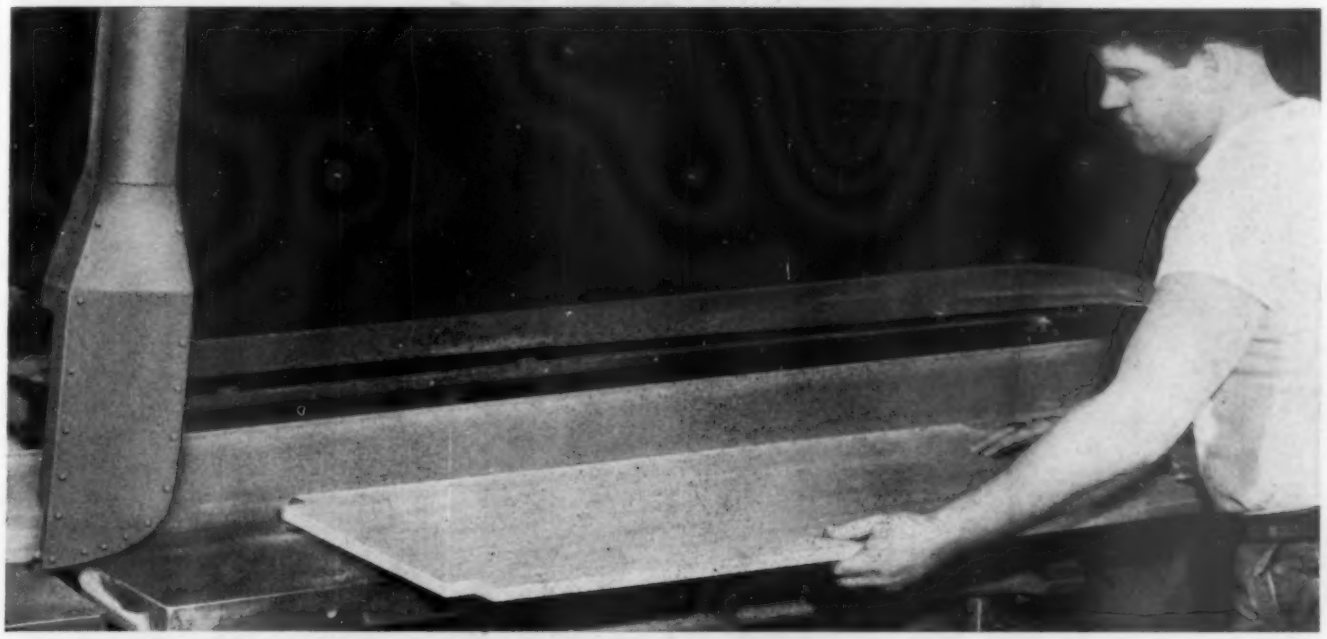

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Demonstration on glass proves DeVilbiss Hot Spray cuts finishing costs

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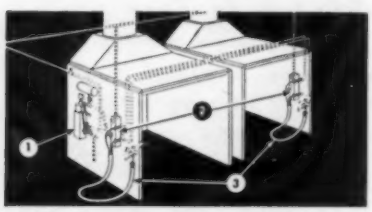
This superior finishing method saves up to 50% in material and labor costs; may be used on all types of products—from autos, furniture, and appliances to military tanks. For facts on how much the DeVilbiss Paint Heater can save *you,* call your DeVilbiss supplier! *The DeVilbiss Company, Toledo 1, Ohio.*



DeVilbiss Hot-Spray system is foolproof; adapts to multiple gun hook-ups. Hot water from master heater (1) heats paint in exchanger (2); heat-jacketed hose assemblies (3) keep paint hot right up to the guns, assuring uniform viscosity at all times at each gun.

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Finishing Problem . . .

Suggested Solutions For Handling "Pitchy" Woods

When the term "pitch" is employed, it may be regarded as a somewhat variable term. Actually, it is an accumulation of resin in moist or liquid form, but the degree of its concentration varies, as does that of its liquidity. Chiefly, it manifests itself in streaks, in lumber cut from the conifers. There are some cases where it is widely diffused; also an occasional case where it is heavily concentrated at the end of a board, and still other instances where it occurs as seams or pockets in pine or fir lumber, etc.

So-called "shakes" occur in standing timber, where the wood substance ruptures along some of the annual rings. Many believe these internal injuries are due to wind strains. However that may be, any such internal opening fills with liquid pitch, which either runs or strongly oozes when a log is cut into boards.

Now and again, a woodworker encountering such a pitch pocket will get pitch smeared on one or both hands; many men are quite uncomfortable until it can be removed. The novice soon discovers that ordinary soap will not cut it. The seasoned woodworker will often wash his hands in machine oil preliminarily. This cuts the pitch; then oil can be removed with soap and water.

Pitch Gathers on Cutters

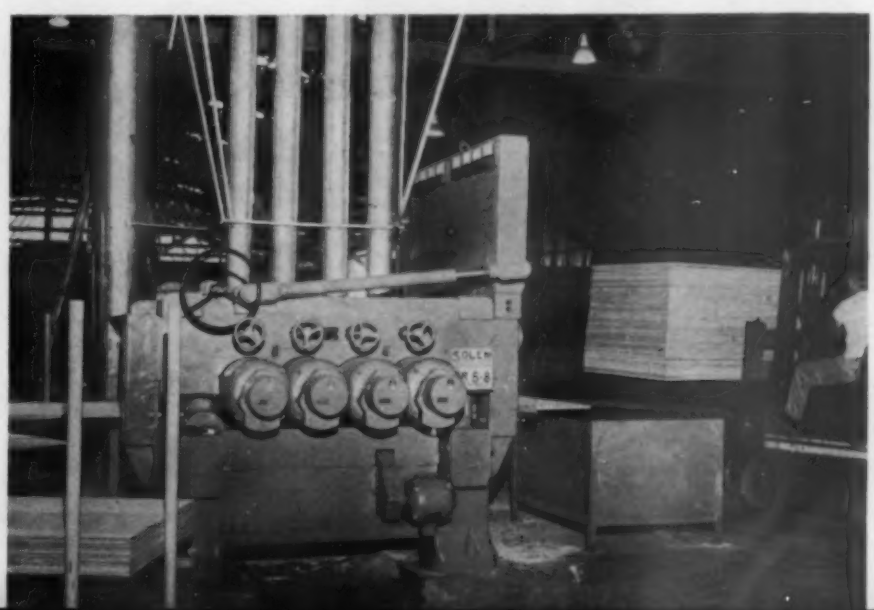
Existence of pitch in lumber coming from the conifers causes a certain amount of trouble in various other directions. One of the most noticeable is the manner in which it gathers on cutters and saws, fouling them, and complicating the sharpening job. Just as machine oil can be used to remove pitch from the hands, kerosene (or a 50-50 mixture of kerosene and machine oil) can be advantageously employed to soften pitch, so it can readily be removed from around saw teeth, knife edges, etc., preliminary to grinding or filing.

After pitch has been slightly softened in this manner, a small piece of hardwood, fashioned somewhat like a knife edge, can readily be used for scraping it away. This can be done without causing any damage to knife edges, saw tooth points, etc.

Trouble with Blast Gates

A certain amount of pitch is rather widely diffused in many boards. Careful study and observation indicates that under thrust and impact of fast-moving saw teeth, knife edges, etc., a certain amount of this pitch passes into the surrounding air in the form of a fine spray. Being strongly adhesive, as already indicated, it gathers on knife edges, or on any other object it may chance to contact. For this reason, it quite often gathers on the end of blower system blast gates, especially in any case where the blast gate is left partly inserted in the blower pipe.

Once a certain amount of pitch has gathered in this manner, the blast gate can no longer be worked freely in its slot. Dust passing up the blower pipe combines with pitch spray, building up an ac-



Installation view of modern double-deck eight-drum Solem sander, using feed rolls at both front and back for passing work through the machine. This unit is equipped with power-driven brushes at the rear, which keep the work and both outfeed rolls clean continually. The sander is here seen processing plywood at the Pacific Plywood Company, Dillard, Oregon.

cumulation on the end. It is therefore a good idea to remove the blast gate from its opening completely, except at those times when it is being used to shut off the blower pipe to which it is fitted. At such times, nothing is being machined; therefore pitch spray and dust will not build up on it. Wherever a blast gate does become fouled with pitch and dust, kerosene application is the cleaning answer, the same as on cutters and saws.

At molders, planers, and similar machines where a large volume of pitch-bearing wood is processed, it is evident that the interior of hoods will be more or less continually subjected to pitch spray. This will gradually build up on the hood interior, together with dust. Very large accumulations are sometimes found in such hoods. They may build up to a point where ability of the given branch pipe to remove all the shavings made is definitely impaired.

Clean Hoods with Hardwood Wedge

Usually, it is not necessary to be too meticulous about removing *all* pitch from the interiors of blower hoods. All that can consistently be removed without resorting to the use of kerosene or anything similar, however, should be taken out from time to time. Generally, the hood can be taken completely off the machine. Then, most of the accumulation is readily removed with a sizable wedge of hardwood. Simply push the sharp edge of the wedge down along the inside walls of the sheet metal hood, in this manner removing the pitch accumulation.

Pitch pockets undoubtedly cause more trouble at the drum sander than elsewhere. They gum up streaks around the sander drums. These streaks, together with the oscillating action on the drum, cause snake marks on sanded surfaces. Sometimes these snake marks are well defined; particularly noticeable when the light strikes them from a certain direction. More than this, however, pitch that

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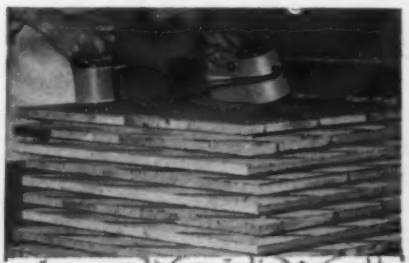

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is low in concentration, but which occurs more or less throughout a board, tends to make such cuttings as are removed by the sander drums cling to them, filling up the abrasive paper more rapidly.

Any way one cares to look at it, abrasive paper on the drums of a sander will have its efficiency reduced much faster where pitch-bearing woods are being sanded. For this reason, in various plants where a considerable amount of pine and fir is sanded, and yet a sizable amount of hardwood is to be processed, operators make it a point to sand all the hardwood they can consistently find coming down the production line, immediately after placing new paper on the final drums.

Later, coniferous stock awaiting drum sanding is run through the machine. By proceeding in this manner, so far as consistent, a greater amount of service is usually obtained from each application of abrasive paper, and snake marks on hardwood surfaces are pretty well avoided.

How Pitch Gathers on Rolls

It is pretty certain that newly machined surfaces on coniferous woods (whether they are being dressed or sanded) reveal countless tiny pitch deposits. Exceedingly tiny amounts of pitch from these locations adhere to outfeed machine rolls. On a machine like the molder, of course, there are no outfeed rolls; therefore no trouble of this kind can occur. At the thicknessing planer, however, or at the roll feed sander, material which has just been dressed or sanded passes between a pair of outfeed rolls.

Many planer operators dressing coniferous stock have found that a pitch-and-dust accumulation builds up spottily on surfaces of the outfeed rolls, which in time will mar freshly-dressed surfaces passing between the rolls. This marring effect is accentuated, of course, by the fact that the rolls exert pressure on the stock. In some cases, a scraper has been applied to the upper outfeed roll of a planer. Where there is no scraper, and such trouble is experienced, an operator must take time out to clean the outfeed planer rolls. This should never be attempted when the machine is running.

Fill an oil can with kerosene, so it can be squirted on the exposed portions of the outfeed rolls while the machine is at rest. Then, turn the feed works over slightly, by hand, until a fresh portion of the outfeed roll surfaces are revealed. Apply kerosene to this part in turn. Proceed in this manner all the way around the rolls. By the time one has applied kerosene all the way around in this manner, that portion of the surfaces to which it was first applied will have the pitch accumulation softened to a point where it can readily be scraped away with a piece of hardwood. The rolls should never be scraped with any metal object.

This problem of pitch and dust building up on outfeed machine rolls can be particularly serious at a roll feed sander. Some double-deck roll feed machines, as for instance units made by Solem, are much employed for volume sanding of fir plywood. Here, the potential occurrence of such trouble has been forestalled by incorporating power-driven brushes in positions where they automatically clean both the upper and lower feedout rolls, plus stock as it leaves the machine. This insures that the degree of finish produced on the work by the final sanding drums will be retained as panels pass from the machine. • • •

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PEARSON BLOCK & EDGE SANDER

The attachments shown on the table above cannot be used simultaneously, as the type of attachment used depends on the type of sanding required.

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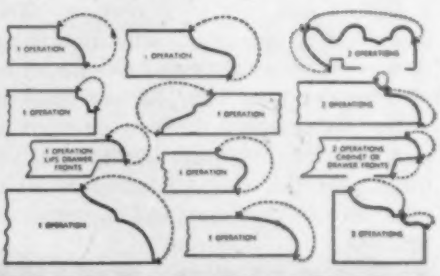

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The most surprising feature of this airless spraying operation is the lack of spray booth enclosures. No need for them. There are no clouds of over spray floating around the room. The small amount of mist which is not laid on the surface is easily carried away by the two exhaust fans in the wall.

AIRLESS SPRAYING Makes a Clean Operation

■ Jim Durham, finisher at Wagemaker Co. in Grand Rapids, gave us a dramatic demonstration of his Bede airless spray equipment used for applying hot spar varnish finishes on mahogany boats.

The most impressive feature of the operation was the lack of a spray booth. Instead of a garage size enclosure and elaborate attachments for filtering the exhaust, we found nothing more than a mere shield protecting the wall and a small hood enclosing two exhaust fans. Even this appeared to be almost unnecessary when we saw how little spray vapor was dispersed into the room. The moment the spray gun trigger was released, all vapor seemed to disappear like magic. No "clouds" floated around the shop to settle on finished surfaces or on the eye glasses of nearby workers.

Airless spraying lays, perhaps, 90% of the material directly on the surface and builds up a considerably denser coating than can be done with air without running or draping. Jim Durham said that two coats of airless spray equal three or more of the same material put through his other equipment. Yet, the wearing quality of the airless coating is about the same and appearance can be made somewhat better with practice.

In his air spraying equipment, Jim must use his varnish diluted with one part of thinner to six of varnish. In the airless system, the varnish is "thinned" to spraying consistency by a heater unit in the equipment. This seems to avoid much waste of material.

Air lines from the plant compressor supply drive pressure of 80 p.s.i. to an air actuated pump. Air drive is more convenient at Wagemaker than electric for this operation. The pump recirculates Petit V-037 varnish from a supply can through a thermostatically controlled heater and up the hose to the spray gun at a nozzle pressure of about 400 p.s.i. Surplus material returns through another hose to the pump, making the whole volume of varnish remain well mixed at an even temperature.

Jim says he needs to clean the system only once a week by changing the intake line to a can of solvent and the return line to a waste can. As soon as the return shows that clear solvent is coming through, he switches it to the solvent supply can and saves the rest. He circulates the solvent for about 20 to 30 minutes until he thinks the entire system is thoroughly cleaned.

The system requires more skill on the part of the operator. Jim has to put a new operator through a period of special training to help him adjust to some of the major differences in technique, particularly if the operator has been accustomed to using regular spray equipment for a long time.

For one thing, this type equipment will not allow flaring or feathering of material by changing finger

Hot-spar varnish is applied to Wagemaker mahogany boats with Bede equipment mounted on a small four-wheel dolly. Varnish from supply can in right foreground recirculates through compressor and heater units, then through hose to spray gun. Overflow returns by another hose to supply can, keeping supply well mixed and at an even temperature.

pressure on the gun trigger. When you press the trigger on a Bede gun, the spray is on full force. Release it, and the spray cuts off completely. No adjustment is permitted on the snap-action valve.

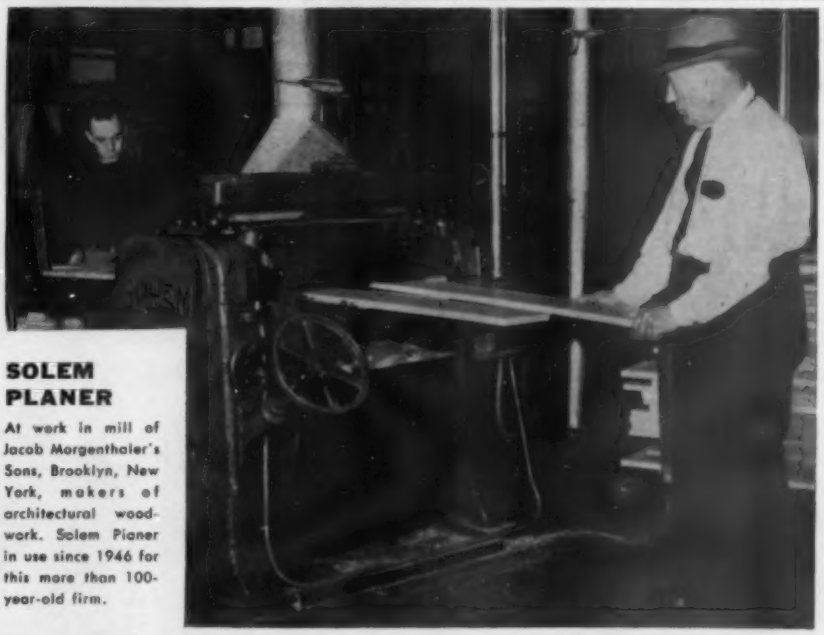
Because of this feature, the operator must learn to make more even passes over his work. He must swing at a steady rate, and, as much as possible, at the same distance from the surface.

That, however, is not a serious problem, once the operator becomes adjusted to this rather strange method of spraying. Actually, it produces a cleaner, more even finish when the operator unlearns his old tricks of spray gun handling. And, as Jim points out, when you spray flat surfaces, the work actually goes about twice as fast.

These are only a few of the features which have become apparent during the past year and one-half during which Wagemaker Company has been using airless spraying. They are some of the reasons why the company eventually may consider converting to this method of finishing their boats throughout the shop at some future date. • • •

When we give thanks for what we have and appreciate what we have, we do not need to worry about what we have not.

—LOWELL FILLMORE



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This non-oscillating 24" drum produces a smooth sanding job, leaving no side streaks. Drum is 14" diameter, 24" long, felt-covered, with spring sandpaper lock holding paper snug and tight.

Variable feed 15 to 30' per minute; dust chute easily removed for changing sand paper or sanding curved work.

Drum and Idler rollers mounted on pregreased sealed ball bearings, requiring no attention. Capacity for stock up to 6" thick, lengths 16" and longer. With extra pressure bars will sand material short as 9".

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Finishing Room News Notes

Abrasive Paper With Special Coating

Armour's "No Load" finishing paper is a new concept in coated abrasives. No Load finishing paper has a special coating applied to it. The extra coating is applied while the paper is being manufactured. This famous Armour finishing paper is coated with No Load because it has long been recognized that in the sanding of soft materials, the grits on the surface of the paper load with foreign materials. This is caused by an accumulation of the soft particles between these grits or grains. When these particles have built up to

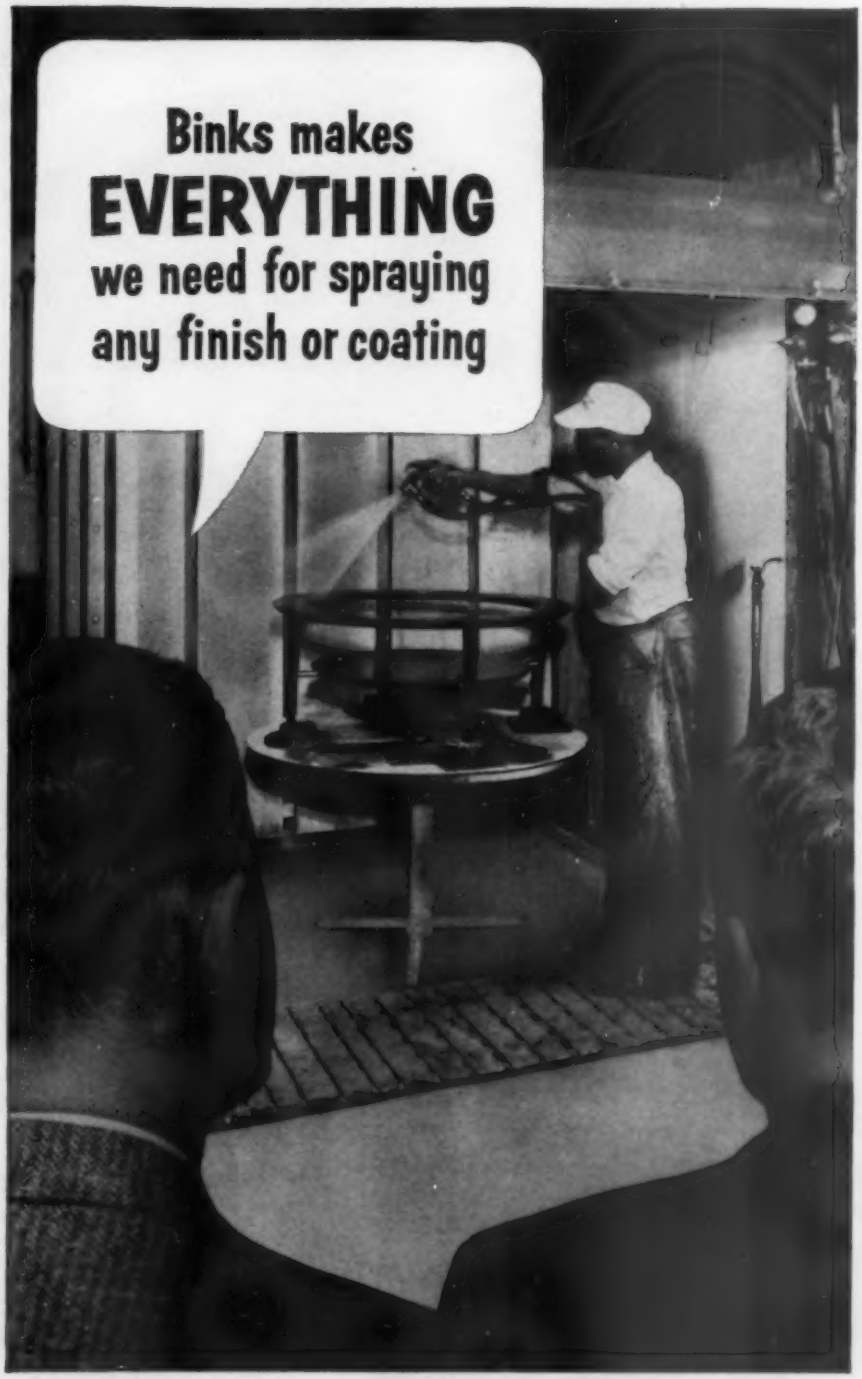
Imperial Furniture Company uses Armour's No Load finishing paper for these results on its tables.

the level of the grains, the sheet of finishing paper becomes smooth and will no longer cut . . . even though the grain is still sharp. As a result, it is often necessary to throw away good finishing paper before the end of its cutting life, an extremely costly process to the user of sandpaper.

Armour's No Load finishing paper has a tough and flexible backing. It contains a special rubber base incorporated by a unique paper treating process which prevents slipping in the operator's hands. No Load finishing paper is easy on the operator's hands because he does not have to press down on the paper sheet while sanding to obtain a smooth finish.

A special formulated glue developed by the Adhesive Division of Armour and Company, is used to bind the grains to the paper surface. When bound in this manner, grains do not drop off when sanding sharp or rough edges. It has been found that Armour's No Load finishing paper is up to 39% lower in cost than other types of paper commonly used for finishing.

Crystolon No Load finishing paper can be used to finish hard woods while



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Oakley H-5 EDGE SANDER

HANDLES ANY SIZE STOCK EFFICIENTLY

This heavy-duty oscillating sander is a real workhorse! Wood throat prevents belt dulling against metal. Also available in non-oscillating Model H-5A.

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Oakley Model H-6 for plants using stock of limited size and where floor space is a problem. Model H-6A is the non-oscillating unit.

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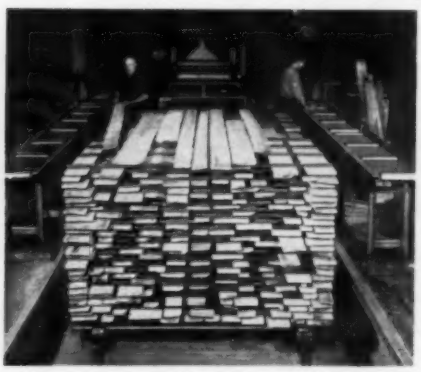
WRITE FOR **FREE** *LITERATURE*

Department 10

The Oakley Co.
SINCE 1934

BRISTOL TENNESSEE

Why Leitelt Lumber Lifts Will Save Money, Improve Production



The Leitelt Lumber Lift maintains that constant, efficient working level in your lumber handling operation. By convenient, push-button control, the operator maintains the top of the pile at the right level. The Leitelt Lift reduces the number of men otherwise required for planing, ripping, loading and unloading cars and other operations. Costs are reduced by the use of less manpower and the operator's job is made easier, thereby increasing his efficiency. Less floor space is required and breakage of boards and stickers is eliminated. Working area is kept cleaner, neater.

Send for free booklet describing Leitelt Lumber Lifts in detail.

LEITELT IRON WORKS

400 MILL STREET
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Another table which has been sanded with No Load finishing paper. These same fine results can be obtained on many other types of wood products.

garnet No Load finishing paper is recommended for finishing soft woods. Readers may secure specific application usage through the Coated Abrasives Division, Armour and Company, Alliance, Ohio.

Use postpaid card. Circle No. 1

New Spray Booth Catalog

Spray booths of every type, size and application are featured for the first time in a single catalogue in the new DeVilbiss publication designated I-7000 which is now available.

Included are full descriptions and specifications for custom design units and/or "ready-made" units, which can be erected with only a wrench and screwdriver for tools, as well as all information necessary to select the right type, size and features of a spray booth.

The introductory section, for instance, illustrates and describes water wash, paint arrestor, dry baffle, ceramic and traveling spray booths and states conditions for which each is best adapted.

This is followed by an illustrated "Selector Guide," an innovation in spray catalogues, each with capsule descriptions of the booth, how it works and its primary uses. Each illustration is keyed to the page number and section in the succeeding pages where detailed information is available.

The catalogue includes a special section detailing seven points to consider in selecting a spray booth.

All types and sizes of spray booths and complete exhaust systems are covered in the catalogue. The wide range of prefabricated DeVilbiss booths adapt to most installations. Where requirements are unusual or complex, the company designs and manufactures custom booths to fit the requirements.

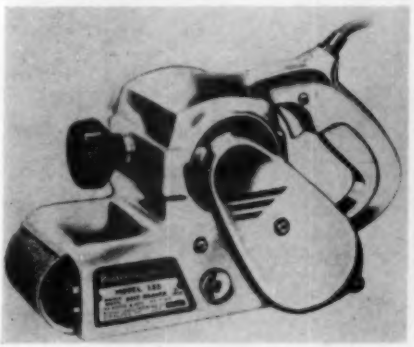
Copies of the new I-7000 catalogue

are available from the DeVilbiss Company, Toledo 1, Ohio.

Use postpaid card. Circle No. 2

Porter-Cable Belt Sander

A new lightweight, easy-to-handle belt sander has been announced by the Porter-Cable Machine Co. The heavy duty Model 153 has the power and stamina for a variety of sanding jobs. A Universal 115 volt motor powers a 3" x 21" belt. The belt idles at 1425 surface f.p.m. and operates at 850 surface speed per minute under load.



In its light weight polished aluminum housing, the sander features ball and needle bearings throughout and precision spur gears. A special belt tension device permits changing the abrasive belts in seconds. Trigger switch and push button lock provide instant control of the tool. A new rubber timing belt which assures positive non-slip drive, eliminates the need for a belt take up mechanism and requires no lubrication.

Weighing only 10 lbs., the sander measures 6-5/32" wide, 11-¾" long and 7" high. Three assorted abrasive belts plus an operating manual are furnished with the machine. An accessory bench stand which converts the Model 153 to a stationary belt sander or grinder is available at extra cost. Used with the accessory bench stand, this sander is particularly useful for precision sanding of board edges, cabinet work, and other stock which is too small or delicate to be sanded conveniently with a portable tool.

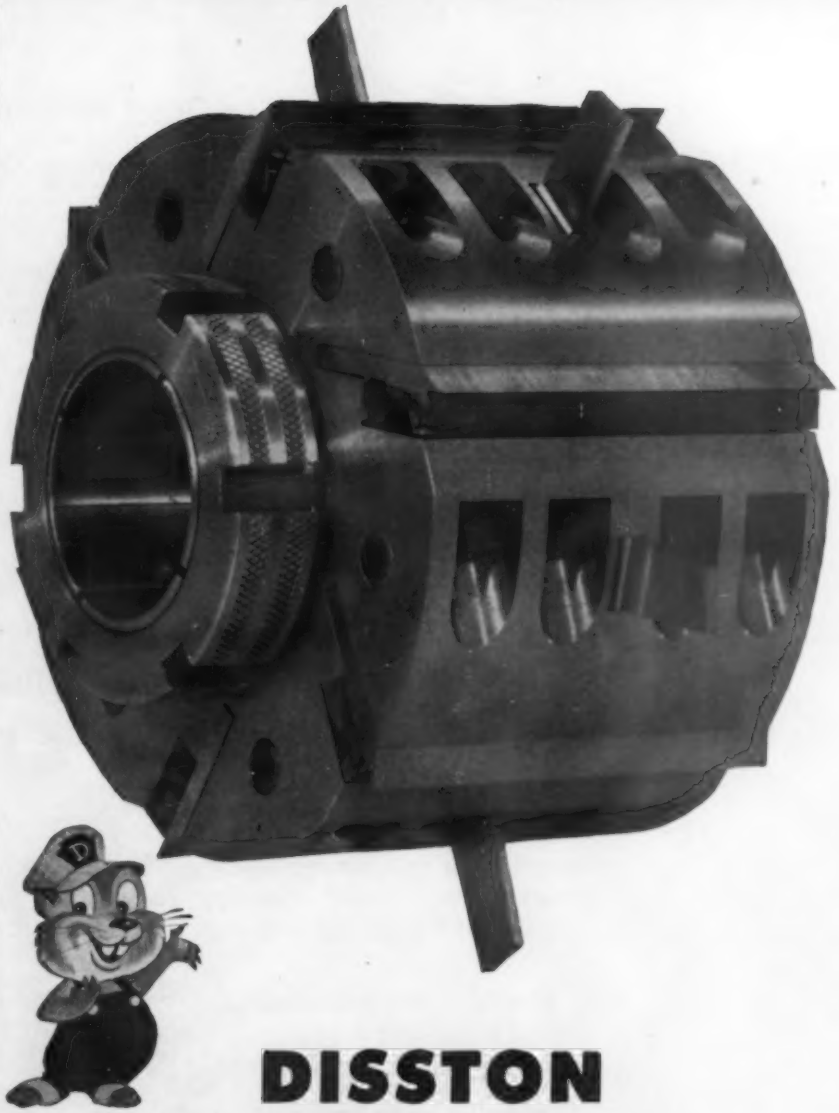
For information on the Model 153 belt sander and a 48-page catalog of other electric tools, write Porter-Cable Machine Company, 114 Exchange Street, Syracuse 8, New York.

Use postpaid card. Circle No. 3

America's Natural Resources

This book was edited for the Natural Resources Council of America by Charles H. Callison of the National Wildlife Federation. It presents a summary of facts about America's natural resources and their conservation.

Order from the Ronald Press Company, 15 East 26th Street, New York 10, New York.



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CUTTER HEAD
surfaces and splits 1" lumber
in one operation

The splitters in the specially-designed Disston Cutter Head shown here are clamped against a ground surface.

The head is made of two pieces permanently assembled after the splitter pockets have been machined.

Disston's exclusive manufacturing method makes it possible to grind in one plane the surface against which the splitters are clamped, eliminating the necessity of adjusting the splitters for alignments.

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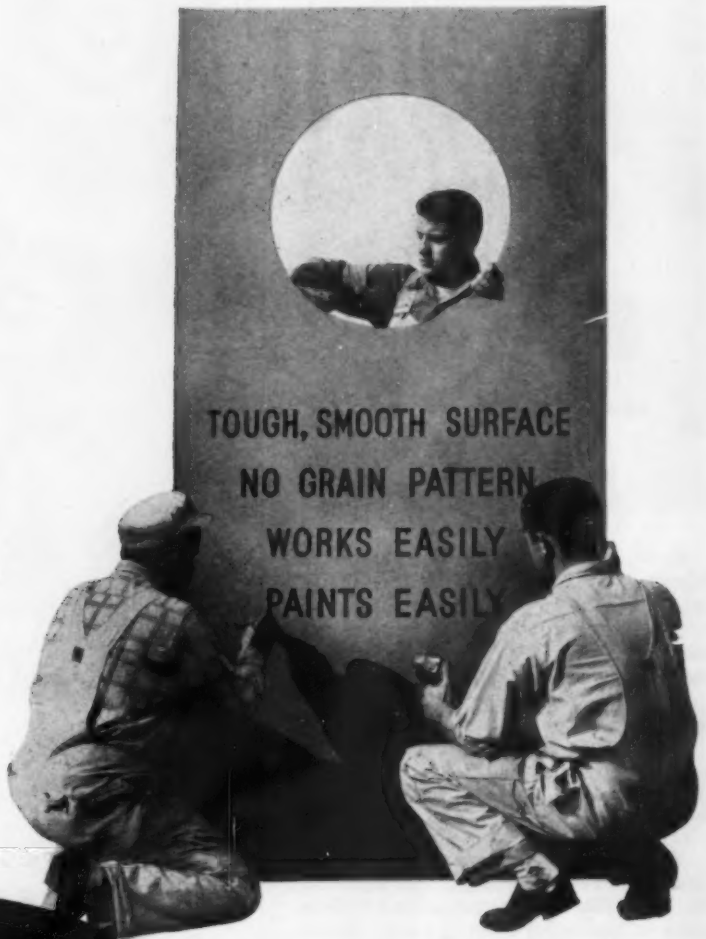
"CreZon overlaid plywood reduces cost... improves product"



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CreZon

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Also available in Canada through:
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"CreZon overlaid plywood is one of the most important new materials for cabinet making to come along in recent years." It's Mr. Tom Hollcraft talking. He's Manager of the highly successful Great Western Manufacturing Company of Seattle, Washington, makers of fine cabinets and furniture. "We like it because of its smooth, grainless surface. CreZon plywood offers easy working and easier finishing...reduces costs all down the line. And the CreZon surface resists scuffing and scratching. We use CreZon overlaid plywood for just about all the cabinets and furniture we make."

CreZon plywood can help solve many design and construction problems. Ask your plywood supplier or write today for free, informative booklet. Write Dept. CR, Crown Zellerbach Corporation, 343 Sansome Street, San Francisco 19, California.

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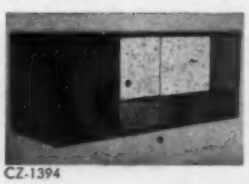

CZ-1394

Each year Great Western Manufacturing of Seattle turns out, in heavy volume, attractive household furniture as well as high quality store fixtures—all of CreZon overlaid plywood.

veneer plywood & laminated wood section

- Folding plywood doors for large openings is a utilization which needs further development. Doors can be made from 4'x10' panels, or panels may be ripped to size.

- Aircraft industry is using densified wood dies. One company uses dies made from selected layers of birch veneer on any job calling for a minimum production of 200 parts.

- Believing that genuine wood is the only answer to quality tone, plywood manufacturers look for increased sales in the hi-fi market. Hardwood plywood combines beauty and acoustical requirements.

- A chance to recapture vanishing markets for boards is available in bevel siding laminated from veneer and common lumber and overlaid with a weather-proof resin fiber coating. A full report is available from the F.P.R. Laboratory, Madison, Wis. Laminated siding made up of common boards, veneer and resin fiber overlay have stood up well in field tests and at least one firm is already making laminated siding.

- The world's record for industrial safety in the plywood industry goes to Algoma Plywood & Veneer Co., Algoma, Wis. More than one and one-half million hours of work without a disabling injury earned the award for this firm from the National Safety Council.

- First warehouse for glued-laminated beams has been established on the West Coast this spring. See the article on the following pages for ways in which these beams help cut construction costs.

High school gymnasium in construction. Five glued laminated arches will be used, 106' x 20'.

LAMINATED TIMBERS

By

Thomas A. Dickinson

Among the California manufacturers which currently specialize in the fabrication of glued-wood arches for building structures is Summerbell Roof Structures of Los Angeles, whose products can be generally described as:

(A) Glued laminated structural members, in which the grain of all laminations are substantially parallel.

(B) Glued "Wej-Weld" structural members, in which the grain of laminae are situated at various angles and interconnected by means of plywood or similar gusset plates or haunches.

Prefabricated theater design with 318' x 131' over-all dimensions, providing seats for an audience of 1800 persons at an estimated cost of $150 per seat, whereas conventional theaters have an actual cost of $200 to $250 per seat.

Lumber for the laminations is selected according to structural requirements and adhered so as to maintain a desirable moisture content for a given locality (not less than 7% and not more than 16% in Southern California). As a rule, the optimum difference in moisture content between the wettest and driest boards in a truss does not exceed 5%.

Prior to assembly by adhesion, the boards are surfaced flat for a finish that will be as smooth as possible without sanding, after which the difference in thickness of laminae is maintained to a tolerance of 1/64" regardless of length or width dimensions. Elaborate precautions are exercised to assure the cleanliness of wood parts prior to gluing, and materials having noticeable resinous exudations are discarded to prevent inadequate adhesion.

Glues are selected according to the functional purposes of different

This type of arched-truss construction is growing in popularity. The arches are fabricated efficiently in factory facilities and use of them requires a minimum use of wall and roofing materials. In addition:

- In public buildings where superior acoustical qualities are desirable, arched structures can be designed to eliminate sharp corners and projections which distort sound.

- In air conditioned buildings, streamlined arch-wall surfaces eliminate the need for strong drafts in order to maintain uniform heating.

- Extreme structural soundness can be attained despite a minimum usage of building materials. These rounded structures can resist loads that are imposed upon them from all directions.

Reduce Construction Costs

arch or truss structures. For example:

(1) Water and mold resistant casein adhesives are used to manufacture those shielded or indoor members, whose moisture content should not exceed 20% in use.

(2) Phenolic, melamine, and resorcinol aldehyde adhesives (which can be heat-cured at temperatures of 200° F. or less) are used to manufacture those members which will be exposed or submerged after use in a building structure.

Wood components are laminated or adhered at low pressures as well as low temperatures, as a rule, but have consistently met specifications which require a bond to withstand greater stresses than will the bonded parts.

Where the curvature of a truss has a radius of less than 150 times the thickness of lamination, the slope of grain in laminae within one-tenth the depth of a member (from the outer face of each outer lamination) is arranged so that it will not exceed 1 in 15. No end joints are allowed in laminates whose radius of curvature is 150 times the thickness of the individual members, or less; but where the thickness-curvature ratio is higher, scarfed end joints are frequently preferred.

The slope of scarfed joints, where laminations are fully stressed, does not exceed the steepness allowable for the slope of grain in a given grade of lumber unless the slope of scarf is flatter than 1 to 12 or the radius of curvature exceeds 150 times the thickness of lamination. Further, the slope of scarf generally conforms directionally with the slope of grain; and, where appreciable bending stresses must be withstood, laminae are assembled so as to disperse end joints—with no joint directly over another in

The glued wood arches in this partly completed theater structure were purposely graduated for better acoustical and air-conditioning qualities.

adjacent pieces, and with no scarfed joints sloping in the same direction in adjacent pieces which are closer together than the length of a scarf.

For wide members, a lamina may comprise two or more pieces of lumber placed side by side to form the full width of lamination —providing all longitudinal joints in adjacent laminations are staggered at least two inches laterally (preferably more). Width, top, bottom, or face laminae are made either from a single piece or from pieces glued together edgewise.

When laminae are glued over tapered pieces, the slope of the taper is 1 in 12 or less; and every practicable effort is made to minimize end joints at each and every cross-section of a member (one joint in three successive laminations being considered the allowable maximum).

Assembly clamping pressures are specified at 75 p.s.i. or less to assure maximum adhesion without dimensional or similar variations, and clamps are checked at 30-minute intervals to maintain uniform pressures. Nails are never used in lieu of clamp pressure to adhere laminae.

Trusses and arches used in the construction of a church in San Fernando, California.

Glued-wood arches have been used in connection with virtually all types of building structures, including:

(1) Reinforced concrete or brickwork—concrete or brick being used to provide foundations or parapet walls, on which the arches were doweled or bolted to produce a ceiling or roofing structure. Stubby parapet walls are used in connection with arch-type structures when a completely-contoured shape would seriously reduce the amount of usable space in a building.

(2) All-wood structures—wherein arches provide a basic frame for the attachment of standard lumber components with nails. The aforementioned theater, for example, is essentially an all-wood structure; it will be shielded to meet the fireproof requirements of current building codes by the application of external rubber-composition roofing materials, and with an indoor finish of blow-on asbestos coating preparations.

(3) Steel construction—wherein steel trusses or beams supplement the arches by serving as reinforcements or intermediate supports for floor and ceiling or roof components. • • •

High Speed Saw With Clamp Table

CUTS PLYWOOD... PLASTIC...HARDBOARD to Precision Tolerances
PRODUCES SMOOTH UNCHIPPED EDGES

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Stock big sizes and cut it as you need it. That's the success story behind Ty-Sa-Man saws that are paying big dividends to Kitchen Fabricators, Production Woodworking Shops and Furniture Manufacturers. Delivering machine tool accuracy in the portable tool price range, the 144-B makes long cuts on plastic and other hard-to-handle material quickly, accurately . . . produces clean, true, straight, square, unchipped edges that require little or no finishing. Clamp table handles big sheets, permits mitre and other odd-angle cuts.

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HERE'S A "SQUEEZE PLAY"...

that produces profits!

In the production of plywood, veneer, hardboard or other laminated products, there's no room for a "squeeze play" that might fail.

Leading manufacturers find Columbia Hot Plate Presses an all-star contender for applying the "squeeze play" that produces profits. Its rigid design, trouble-free hydraulic system and honest ratings assure dependable performance on any hot plate job.

There are almost a score of Columbia features that guarantee more production, of higher quality and fast, too! Complete details are available in new literature or from your Columbia Hydraulic Press distributor.

Columbia Hot Plate Press
16 Daylight, Platen Size 50" x 102"

WRITE for new FREE Bulletin HP-7 and the name of your nearest distributor.

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The Perkins Trade Mark is your guarantee of quality and reliability when you purchase glues. Since 1899, customer-confidence in Perkins has grown steadily—a deserved tribute to superior products backed by competent service and rigid ethical standards. When you use a Perkins Glue in your operations, you'll agree with other leading woodworkers—*that Perkins serves you best!*

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Dispose of them by calling upon the skilled assistance of the Perkins Technical Service Department. Specialists in gluing methods will study your particular operations and offer suggestions where pertinent. There is no cost or obligation involved in your use of this unbiased advice.

IT'S A PERKINS SERVICE!

RESIN—Hot Press and Cold Press • Liquid or Powder Type
CASEIN—A broad line to meet your specific requirement
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VENEER AND CORE REPAIR COMPOUNDS • VENEER SIZE
GLUE ROOM SPECIALTIES • MIXERS • SPREADERS • BRUSHES

RESIN
CASEIN

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VEGETABLE
GLUES

ESTABLISHED 1899

LANSDALE, PA. KITCHENER, ONT.

CORE MATERIALS . . .

Standard Lumber Cores

By

C. D. Dosker, *President* and S. H. Durst, *Works Manager*
Gamble Brothers, Louisville, Kentucky

When one talks of "standard lumber cores," he immediately poses a problem. In the 30 years that I have been with Gamble Brothers, I have never been able to say that there is such a thing as a "standard lumber core." What is adequate for one type of product may be wholly inadequate for another. End use must determine, in view of present day knowledge, what type of core should be used.

By definition a core is "the central or innermost part of a thing." Another definition says, "the most important part of anything."

I certainly concur with the last definition as it applies to the manufacture of plywood for furniture use, for good plywood requires a good foundation—a good core—adequate for the end use of the product.

From what I have just said you can, therefore, see that in a given piece of furniture, depending on the particular part, one or more types of core stock could well be required for best results.

Unfortunately, for too many years, too little attention has been given to the importance of the proper selection of the type of core and the species of lumber that would give best results.

I would say at this point that there is a definite relationship in my opinion, between the type of core that should be manufactured and the various species of lumber customarily used for core stock.

When one thinks of this foundation material, he must think in terms of end use and the type of exposure required. It is to be an unsupported part? If so, the core material itself will resist stresses that may develop from changing moisture and temperature conditions. Is it going to be a part that is of framed construction, reasonably well supported around its periphery and, therefore, able to resist and contain stresses that may develop? If this is the case, it can affect the species of wood and the type of core construction, as they relate to and affect cost.

Before going further, we should define the various grades and types of standard lumber cores. It is important to recognize the grading rules of the Hardwood Dimension Manufacturers Association because of the fact that this core grade represents a Commercial Standard CS-60-48 of the United States Bureau of Standards. This defines a lumber core as follows:

"CORE—This grade shall be sound on both faces, admitting tight sound knots, small worm holes, slight surface checks, or their equivalent. No ring shake is allowable.

"Unless otherwise specified between buyer and seller, cores are to be clear 2" on the ends and two sides.

"In banded cores, no restriction is placed on location of defects in area of core adjacent to the bands. The placement, grade and size of bands shall be agreed between buyer and seller.

"Pieces making up the core may be joined for length, using glued joints, lock, lap, tongued-and-grooved, or butt joints providing no such joint is within 2" from the edge or the ends. Patches or plugs in reasonable amount may also be used provided they are not within 2" of the edges or the ends. Wedge patches will be permitted in the ends provided no such patch is within 2" of the edge of the piece. Stock shall be uniformly surfaced smoothly on both faces."

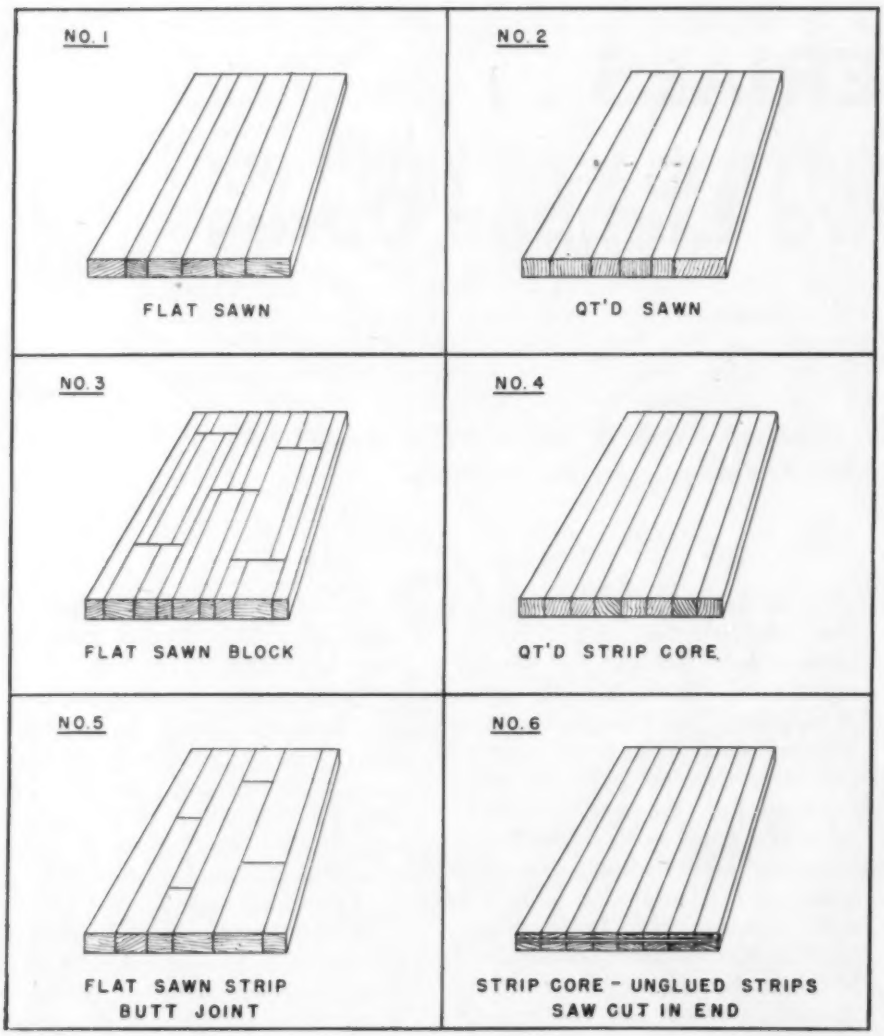
It must be remembered that this Commercial Standard does not define cores by type, but merely on the basis of defects admissible.

There are three things that will affect the grade of lumber and admissible defects that can occur in corestock in addition to its mechanical requirements. The first is the thickness of crossbanding to be used.

The second is the use of the plywood itself in relationship to exposed and machined edges. This third is the type of patching technique used to fill or repair defects in the core faces.

It is perfectly obvious that a core having only one face exposed in the finished plywood will admit defects on the reverse face that cannot be used where the finished part is exposed two faces. The grade of core stock is important because of its

TYPES OF CORES



influence on cost insofar as the grade of lumber that will be required to produce it.

Admissible defects should be defined according to product requirements.

The types of lumber core stock regularly produced are as follows:-

1. Edge-glued flat grain lumber composed of full-length strips from 1½" to 3½" in width. This type of core is by far the most universally used type of core for plywood and is widely used where the plywood part is framed and reasonably well supported.

2. Edge-glued lumber cores made from full-length strips of quarter sawn lumber, strips from 1½" to 3½" in width. This type of lumber core is properly used in unsupported construction where flatness is important.

3. Edge-glued block cores made from flat, or quarter sawn lumber in which the joints of the blocks are staggered and frequently end-joined and glued before assembly into final form. This type of core is made from previously edge-glued short lengths, or strips, uniformly selected for width before assembly, and generally contain full length edge strips on both edges. This type of core is frequently used in architectural woodwork where long lengths and large size panels are required that must be free of longitudinal stresses.

4. Strip cores produced from uniform strips made from 4/4 or thicker lumber. The strips are full-length and, if gang sawn from flat grain lumber, produce a quarter sawn strip construction core. This core is exceptionally stable and is used largely by the piano trade for unsupported parts, such as music racks and falls, where extreme stability is necessary.

5. Strip block cores similar in most respects to the quartered strip core, except the strips may be gang sawn from flat sawn lumber and the ends butted for length, providing many of the advantages of the quartered strip core where high stability of the plywood is required.

6. Unglued strip cores are made from uniform strips of uniform thickness that are restrained in frames at the time of the application of the crossbands and faces. This type of core construction is seldom used in this country, but is used under conditions of high humidity exposure where a minimum of stress is developed within the core material itself.

There are certain advantages and disadvantages in the use of each of the above-described types of lumber cores. Manufacturing operations or facilities do not always permit the use of the most desirable type for any particular part. It is, therefore, necessary to make an analysis of the type that will be most adaptable to all parts in end use in order to obtain highest manufacturing efficiency and greatest yield from lumber. This not only applies to lumber cores, but it applies to other available core materials. It, therefore, becomes necessary and desirable to select the best type applicable to all parts if production quantities do not justify the selection of specific types for specific end use.

Wood is not a homogeneous material. It is not isotropic. There is a wide variation of mechanical properties between species, and a variation in mechanical properties within a species, depending on the manner in which the lumber is

sawn from the log. The behavior of flat sawn, quarter sawn, and bastard sawn lumber is different. It is necessary to recognize this fact in the planning of production of core stock, because of the variations in behavior in shrinkage and swelling, as the effects of heat and moisture may influence the end product.

It is undeniably bad to mix plain sawn and quarter sawn lumber in the same core. The quarter sawn lumber will tend to shrink or swell through the thickness of the core in greater proportion to an adjacent piece of flat sawn lumber, which tends to shrink or swell through the width of the core. You can frequently look at the surface of a finished piece of highly finished plywood and detect the depression in the face caused by one strip of quarter sawn lumber intermingled with flat sawn strips. Some joker will come along and say, "sunken glue joints." Look at the end of the panel. If it is exposed you can see, in most cases, the cause of the trouble.

Wood today is an engineering material, and whether it be in lumber or veneer form stress-strain relationships can be calculated. We must remember that, when we are manufacturing plywood, we are building stresses into this plywood with the application of the crossband and the faces. This is particularly true where the use of decorative plastics are involved.

When we have examined the basic needs of the product, we are then free to establish the type of core and core materials that can best meet the requirements of the product.

In the selection of species for lumber cores for furniture and cabinet use, the soft hardwoods have generally been the most commonly used.

Yellow poplar and basswood, because of their ease of working and stability, have probably been the most generally used. Sap gum and black gum are also widely used, but black gum, unless quartered, has been most acceptable in strip core construction. White pine and sugar pine are very acceptable species in plywood construction where the machining and finishing of the edge and end grain is not of importance. Redwood is also an acceptable species, but unless properly handled where thin crossbands and faces are used, redwood, like most conifers, is apt to show grain transfer of the annual rings in the core. Usually this shows after long aging.

The grade of core stock is largely dependent upon the requirements of the individual product. In most cases, sound tight knots up to ½" in diameter can be included in the core grade if not on the end or edges. In many cases, the type of product is such that larger defects can be used, especially if heavy crossbands are employed and adequate filling or plugging of the open knots is accomplished. If plugs are used, weep holes should be provided in the plug.

The use of hardwoods has many advantages in the average furniture or cabinet plant, and the selection of the material used for core stock is related definitely to their lumber procurement program.

In a casegoods plant, for instance, where approximately 70% or more of the total footage of lumber requirements is for core material, it permits the purchase of log-run lumber where the lower grades of No. 2 and 2A Common, and other end cuttings from the upper grades can be utilized in core stock. Therefore, the selection of lumber for core stock has a direct relationship to the over-all requirements.

In the average furniture or cabinet plant, the manufacture of core stock, because of the grade and size requirements, does not lend itself to complete automation. This, of course, is possible in door plants and on items in which the volume of the individual size is such that complete mechanization is both possible and desirable. In these cases, lumber lends itself to mechanization as a core material as readily as almost any other material that can be procured.

In most plants today the manufacturing flow of material going into core stock is fairly well coordinated with other requirements so that costs are reasonably low.

Where lumber core stock comes in for criticism because of failure to perform, you can, in most instances, go back to the techniques used by the individual concern in manufacturing procedures. The difficulty usually starts at the very beginning with the care and handling of the lumber. Frequently the lumber going into core stock is not uniformly kiln dried. This is especially true in such species as sap gum where the kiln drying of the heartwood presents some problem.

Lumber for core stock should be dried to 5% moisture content, or less, with a distribution between shell and core of not more than ½ of 1%. By the same token, in the forming of the packages for the dry kilns, if the sticks are not of uniform thickness, the lumber will come from the dry kiln full of warp and twist as a result of improper handling. This kind of lumber cannot produce a flat and stress-free core.

Again, too little attention is paid to the importance of the width of strips and grain direction. In the edge-gluing process no care is taken to separate plain sawn from quarter sawn lumber. We must recognize that much of the lumber being utilized today comes from trees of small diameter. As a result, in flat grain lumber you have the hazard and possibility of adjoining pieces having the annular ring in the same plane. As a result of this, the two adjoining pieces have a tendency to stress or cup in the direction of the greatest radii of the annular ring. Lack of care in separation at or before matching results in unbalanced construction. The quartered strips want to shrink and expand through the thickness; the flat sawn strips through the width. Depending on the thickness of plywood, a quartered strip adjacent to a flat sawn strip can give the appearance or impression of a sunken strip through the face of the panel.

Much is, and has been, said about sunken glue joints resulting from the use of water-soluble adhesives in the edge-gluing of core

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Patterns and templates are quickly and easily made with fir plywood. Photo shows gear blank pattern for military use developed by Western Gear Works, Seattle, Washington. The company reports: "Plywood is especially good where stresses of moulding would cause ordinary wood to break or sag. Also, considerable time is saved in the making."

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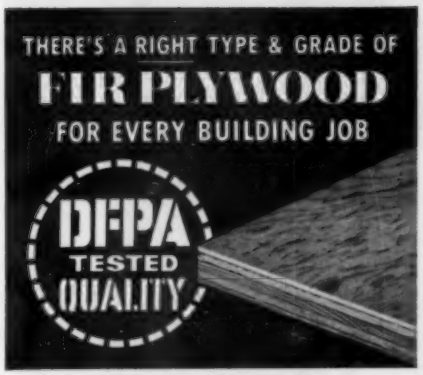

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DFPA grade-trademarks appear only on plywood manufactured, inspected and scientifically tested under the DFPA quality control program. DFPA, Douglas Fir Plywood Association, is a non-profit industry organization devoted to product research, promotion and quality maintenance.

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stock. If proper gluing techniques are used and the core stock held for 24 hours after gluing before the final surfacing and application of the veneers, sunken joints need not occur in cores made from properly dried lumber. Most of the so-called "sunken joints" in lumber cores are not the result of moisture in the glue line but are the direct result of the technique of planing the lumber for final panel thickness.

In many cases, the lumber core is surfaced from rough glued thickness to final thickness of the core in a single pass through the double surfacer. As a result of knife pressure, the fiber of the wood is compressed by surfacing, and when allowed to relax it tends to rise variably in each strip, depending on its density. The area of the glue joint is restrained and cannot rise. This difficulty can be overcome, in most cases, by two planer operations in which the panel is first brought to within 1/16" of its final thickness, allowed to relax for a period of an hour or longer before final surfacing, and then surfaced to a final thickness by a minimum cut of 1/32" from each face. If the lumber has been properly kiln dried and this surfacing technique is followed, the so-called "sunken joint" will be an unknown cause of trouble.

The lumber core for furniture plywood is still the standard by which other materials must be judged. The fact that it represents a means to higher utilization of lumber required for other parts, its ease of machining, and finishing all play an important part in the final cost of the product, and it is the ultimate cost that is important.

There is one thing that all industry must guard against. Simply because a product is new does not necessarily mean it is superior, and simply because the cost of a new product may be less than the cost of its replacement as a component part does not mean that when the unit is finally assembled any cost savings have been accomplished.

By and large, we are prone to accept new materials without taking the trouble to analyze what we could do to improve and lessen the cost of the materials currently in use and of proven satisfaction.

• • •

This paper was contributed by the Wood Industries Div. of the American Society of Mechanical Engineers for the recent meeting held at Winston-Salem, N.C. The speech appears here through the courtesy of the A.S.M.E.

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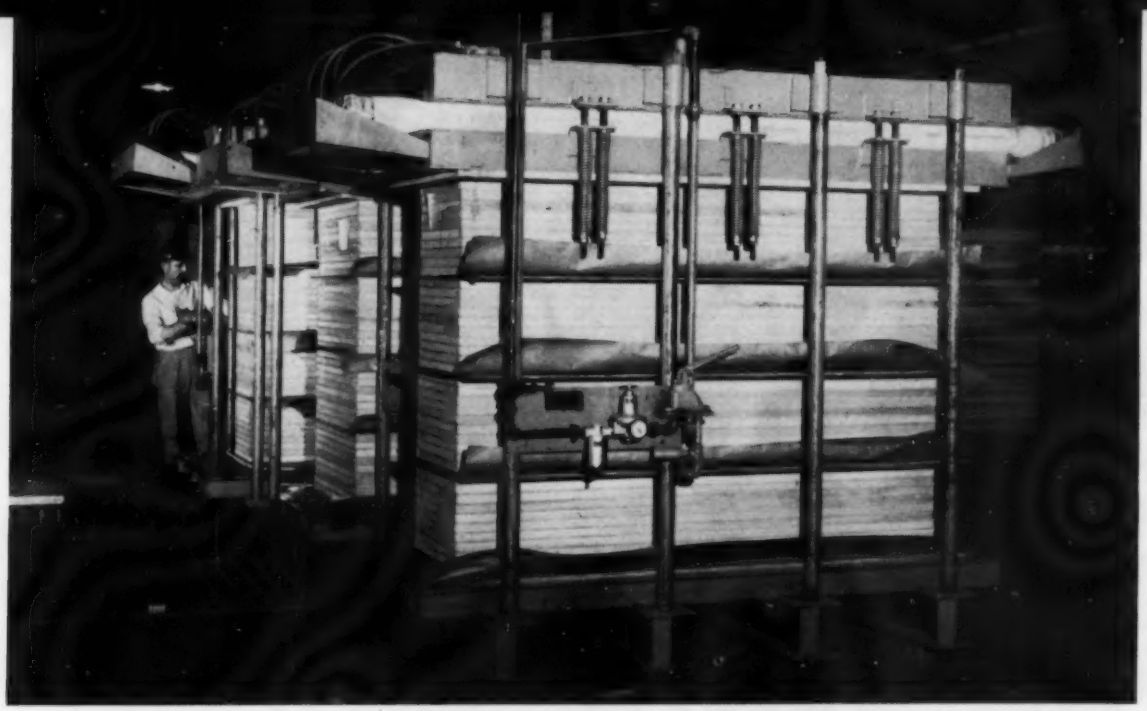

Three different sizes of doors are fabricated at one time, each stack rolling into the press from conveyors leading back to three lay-up positions. Air lines at top connect with five pressure hoses on two presses at right and six hoses on press at left.

HOW AIR HOSE PRESSES ARE USED IN MAKING HASKO DOORS

Among their numerous and varied items manufactured for government, industry, and consumer markets, Haskelite Manufacturing Corporation of Grand Rapids turns out a steady stream of Hasko flush type interior doors at the rate of 240 per hour with the aid of three Black Brothers air hose laminating presses.

Haskelite makes three principal grades of hollow core doors in ten popular widths ranging from 1'6" to 3' using ⅝" wood fibre core filler, 1⅜" stiles, 2½" top and bottom rails, and three plies of 1/20" veneer facings, laminated with water-resistant glue, type II bond.

Door Division Manager Julius Adams said the key to their efficient operation is their bank of three air hose presses. The shop has tried both hot and cold presses with much less success in the past.

With a generous supply of compressed air available at 180 p.s.i., the fast operating air hose presses solved the problem. Each of the three presses works on a 30-minute cycle, pressing 40 doors at one time. Two of the presses have five air hoses while one has six, although each is operated to develop an applied pressure of about 120 p.s.i. on the face of the platens in about 60 seconds.

Two men lay up veneer, frame, and core continuously, taking about 10 minutes to make a stack of 40 doors ready for a press. Other workers remove loads alternately so that one of the three presses can be charged as fast as a stack is ready. This provides a steady flow of 240 doors per hour at normal rate of production. One, two or three different types or sizes of doors can be made at one time, depending upon current shipping requirements. Each press can be regulated instantly by its own separate control and regulator to apply pressure varying according to size of door.

Twelve springs support upper platen and lift it to full clearance height when pressure in the air hoses is released. Lever at side of press controls air valve which applies or releases pressure in lines connected with fire hoses. Pressure regulator and gage provide for regulation of pressure according to load being handled.

CYANAMID

ADHESIVE NEWS

"We cannot afford to use any other adhesive than URAC® 185"

says MARK PRICE, president of Desk Tops Inc., Cleveland, Ohio

Claiming 75% of the market for school desk tops east of the Mississippi, Desk Tops Inc. cannot afford a faulty glue line in its laminated tops.

Mr. Price says, "A delamination caused by a faulty glue line is unheard of by this company. Our customers expect us to guarantee our tops against this failure. Consequently, we believe we *must* continue to use URAC 185, which has served us so well."

URAC 185 makes one of the strongest possible joints between the hardwood plywood cores and rich melamine plastic surfaces. It is both gap-filling and craze resistant, and so moisture resistant that tests have shown wood to deteriorate before the bond. Moisture resistance is particularly welcome in cafeteria table tops, for it eliminates the risk of edge delamination starting from wet spills or washing.

URAC 185 is easy to work with, setting at room temperature under low pressure, and it can also be used with strip heating. It's the ideal adhesive for assembly gluing of furniture, sports goods, millwork, joint assemblies, bonding of decorative laminates and lumber core bonding. For details, please write or call.

Plastic desk tops are here to stay—about 80% of all school furniture sold last year "went plastic." Big supplier of plastic tops for desks and tables is Desk Tops Inc., which accepts no substitutes for URAC 185 Resin Adhesive as the bonding agent.

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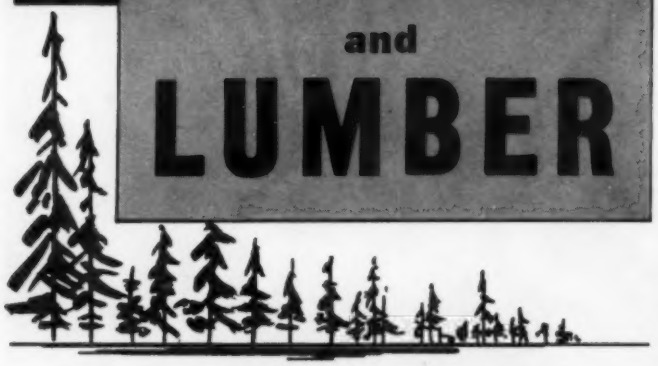

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The air hoses, which look like segments of fire hose capped at the ends and connected to air lines, actuate the movable spring-loaded upper platens. Although the air hose can expand about 4" for maximum stroke, the maximum pressure developed at the platens declines as the maximum stroke is approached. Therefore, a normal stroke of approximately 2" is used for charging and unloading. This provides for maximum pressure and faster operation.

Operation of the press is simple. The lower platen is rigid with two closely spaced ballbearing roller tracks which spring up slightly above the bed to carry the load as it is pushed into position. When pressure is applied, these tracks drop below the bottom platen to permit perfect contact with the load until pressure is released. Then, they spring back up to support the load while it is rolled out of the rear of the press to make room for the next load to be rolled in from the front.

An air control valve permits application of supply pressure or release of hose pressure, as desired. When pressure is released, springs attached to the head of the press automatically lift the upper platen immediately to whatever clearance height has been established.

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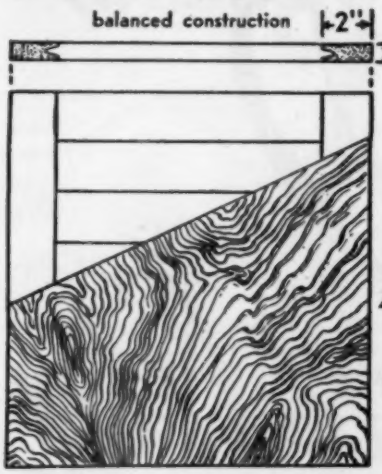

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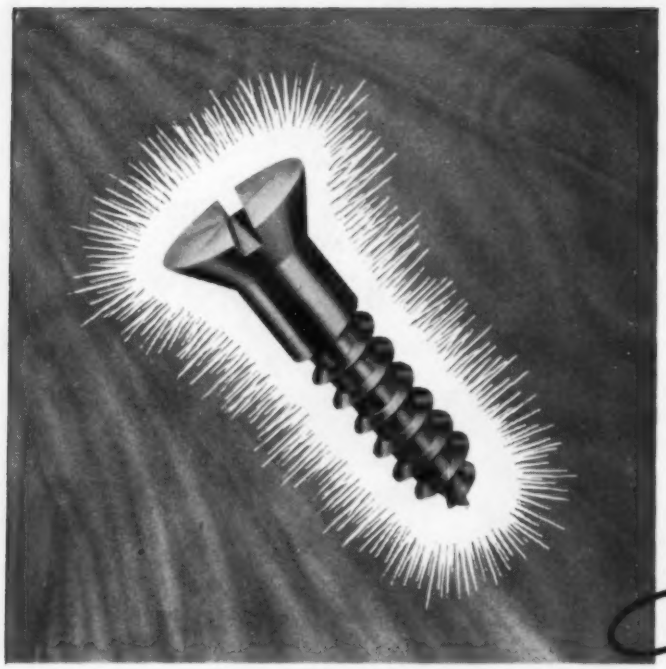

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around the shop

This monthly feature answers readers' questions on common shop problems. If you wish to present a problem, or desire further discussion of problems discussed here, write to the Editor.

How to Make 10′ Dowels

How can we turn out rounds 4″ in diameter and up to 10′ long?

The volume of production desired would influence the turning equipment selected. A concern which turns columns of 6″ diameter and up to 18′ long uses a patternmaker's lathe for the job. Instead of the conventional tool rest, the lathe is equipped with a carriage similar to that of an engine lathe, constructed of two heavy steel plates, one of which slides along the lathe bed and the other plate, which is bolted to the bed, by means of a handwheel and gears engaging a rack bolted to the side of the lathe bed. This type of carriage is also equipped with a power-feed mechanism consisting of a shaft which is driven off the end of the headstock. The top of the carriage is fitted with a cross-slide on which a tool post and cross-feeding device is mounted. The tool post will carry special turning tools or will mount a tool holder for hand turning tools.

What Machines Peel Bark?

How, and with what machinery, can we peel bark from small trees for cedar fencing?

Most concerns use the peeler barker for this job. Typical is a small two-man portable machine developed for barking pulpwood. It consists of a rotating and feeding device which carries the log over a revolving cutterhead and is powered by separate motor or by take-off of truck, jeep or tractor.

The knife-type barker operates with knives set in the rotating cutterhead whose cutting depth is dependent on their adjustment in the head. Cutting depth is controlled by freely rotating discs at opposite ends of the cutterhead as they contact the log as it is rotated against the knives.

The cutterhead is in a fixed position in the barker base, while the worm roll is mounted in a frame pivoted at its base to allow it to swing backward or forward to accommodate varying log diameters. Raising or lowering the driving spur wheel allows feeding of logs of different diameters and feeding action is accomplished by a powered Universal sprocket feed, assisted by the worm roll.

The feed is lowered hydraulically under control of the operator and controls pressure on the log to hold it firmly against worm and flange wheels while controlling rate of feed by its angle. A speed control is provided to permit selection of speeds for sprocket rotation and a hand control allows the operator to control speed of feed as well as reverse direction of feed if a re-run is required.

As it is fed through the barker, the log is supported at the rear by the revolving cutterhead and in front by the powered worm roll. The worm roll is automatically adjusted by swinging pivot arms that swing out from the cutterhead as the arm is raised. Lowering the arm draws the worm roll towards the cutterhead. All members contacting the log remain in practically the same relative position with each other regardless of log diameter. Variable speed control permits adjustment to lower speed for larger logs or crooked or knotty logs of conventional size. Rated capacity of this machine is two cords of pulpwood per hour.

Belt Sanding Small Pieces

How can we sand small 5″ x 6″ to 12″ x 20″ diagonally sawed pieces of wood to a uniform thickness, not necessarily to a standard, but each piece uniform, end to end? We have used a belt sander with fair success.

A brush block manufacturer solved a similar problem to permit sanding backs of brush blocks of diagonal shape through the multiple drum endless bed sander. Using ¾″ utility grade plywood as the base, carrier boards were made up with edge and crosspieces along the length and across the panel which permitted the diagonal pieces to be nested in loose formation between edge and crosspieces. When loaded, the carrier boards are fed through the sander with the brush backs extending well above the retaining strips to be sanded cleanly

and uniformly. It is important that all sections of the carrier board be fully loaded. The strips should not be wider than can be properly bridged by an individual sanding drum, thus preventing any danger of tipping.

Do Worms Eat Ash?

We are confronted with worms eating up our dried ash lumber, even after it is manufactured into furniture.

The obvious remedy to your problem would appear to be treatment of your lumber with a wood preservative. You mention furniture so the wood would have to be treated with a preservative that will not impart objectionable color to the finished products.

Pentachlorophenol is an effective preservative which kills most of these worms and insects in all stages of development. The cold open tank treatment is usually used with the wood being submerged about five minutes for each inch of thickness. The solution recommended is a light fuel oil or similar solvent with about 5%, by weight, of Penta as the preservative base. This dripping treatment is relatively inexpensive.

To treat the wood and control insects in assembled furniture, Orthene (Orthodichlorobenzene) is sometimes used to paint over the surface. Fumigation with hydrocyanic acid or similar fumigant may also be employed. It is quite probable that your plant is now infested and a thorough plant fumigation would be in order. The handling should be entrusted to specialists in this field.

Various commercial insecticide compounds are also available for spraying, most containing D.D.T., which may be cheaper to apply than the preservative solution but likewise do not function with as much efficiency, being a surface rather than a penetrating treatment.

Drilling Holes Economically

We are enclosing a drawing of plugs that we are about to manufacture which calls for holes through them, which I would designate as oblong. We are wondering if you could suggest the most economical way of making these holes.

An economical rough production means for producing these holes would be to bore the two ends with a bit of suitable size and then use a jig saw to remove the wood between.

For production purposes, however, it would seem that the oscillating-bit mortiser, equipped with air-pressure clamps, would be best suited. Arranged with a wooden base block to support the cut-through hole and the stock held securely by air-pressure clamps, the desired oblong holes could be produced with this machine. If tear-out occurred at the bottom of the hole, this could be remedied by mortising part way through from one face and turning the block over to complete the hole.

This machine is regularly used in the furniture industry to rout out grooves in posts, seats, etc., and operates with an end-cutting fish-tail type bit or a standard side-cutting router bit. It produces an oblong hole with round ends, as required in this application.

Spindle and motor are usually carried on a head-block whose oscillation may be adjusted for side-to-side movement of the desired length. It is usually operated at 150 or 200 strokes per minute. The

MARCOLOY ANNOUNCES—

A revolutionary new cutter head

with adjustable cutting angles and simplified sharpening.

The design of Marcoloy's new cutter head permits adjustment of the knives to selected cutting angles. The same knives will cut all kinds of woods or other materials.

Sharpening of carbide knives—formerly a precision operation — has been so simplified that an operator can grind knives — either straight or pattern—after simple instructions. The knives are sharpened in the cutter head in one operation on a Marcoloy M-2 grinder.

HERE ARE ITS FEATURES:

1 **Adjustable Knives**
Carbide knives (or steel knives) can be adjusted to any selected cutting angle—from 5° negative rake to 25° positive rake—permitting the machining of the entire range of woods, both hard and soft, with one set of knives.

2 **Simple to sharpen.**
The radial grinding method is so simplified that either carbide or steel knives can be ground by an operator after simple instructions.

3 **Adjust instead of joint.**
Knives can be adjusted on the machine so as to eliminate jointing (hence no jointing heel on knives).

4 **Ground radially in head.**
All knives are ground radially in their own cutter head, automatically and simultaneously.

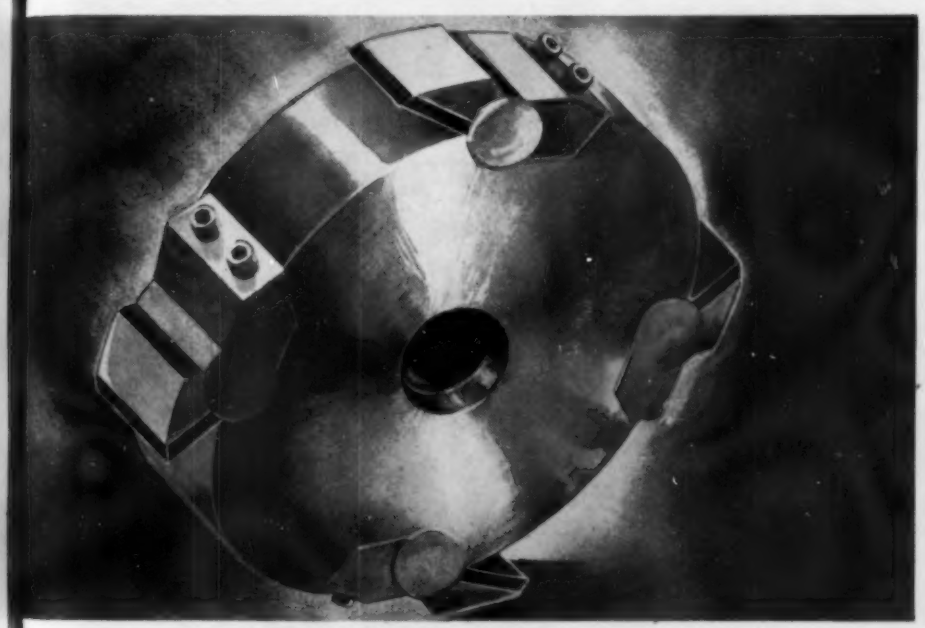
5 **Form knives easily sharpened.**
Grinding of pattern knives becomes almost as simple as grinding straight knives, because of the new radial method used.

oscillating motion of the bit is derived from a drive in which a separate motor is geared to an adjustable eccentric driving an eccentric rod, which in turn drives the head block horizontally back and forth. The bit lowers automatically following each oscillation until a preset depth is reached. In some machines the table is raised and the position of the oscillating bit remains stationary. Automatic feed may be regulated from slow to fast to suit any specific job. The bit spindle usually operates at a speed of 7,200 r.p.m.

Sanding Curved Chair Backs

We are now able to sand all of our chair parts by automatic means with the single exception of our bent chair backs. Do you know of any machine available that will do this?

There is a special production sander now on the market designed to automatically sand curved work, such as bent chair backs, which were formerly hand sanded at the horizontal open sand drum. It functions to carry the work through the machine with a feed roller and the contact of the sanding belt follows the curvature of the work as it passes between the feed roller and moving sand belt. It is reported that this automatic curved work sander has capacity to take work up to 6" in height and 1¾" in thickness.



6 **Combination cuts.**
Combination cuts, such as surfacing and grooving, rabbeting and multi-pattern, can be made with this cutter head.

7 **New system for adjusting.**
All adjustments—diametrical, axial or angular— are made with Marcoloy's exclusive integral micrometric system.

8 **All machines.**
This new cutter head is adaptable to all woodworking machines using cutter heads.

Write for particulars!

MARCOLOY CARBIDES

MARCOLOY INC.
Springdale, Conn.

MARCOLOY, INC.
Springdale, Conn.

☐ Have representative call to demonstrate.
☐ Send complete information.

Requested by..... Title.....
Firm .....
Street .....
City..... Zone..... State.....

Sycamore Does Not Shape Well

I have been having a little trouble in convincing management that sycamore does not shape as well as some of the other hardwoods.

Results of machining tests made of various hardwood species listed the following shaping characteristics for common hardwoods:

Best	*Poor*	*Fair*
Hard Maple	Sycamore	Beech
Birch	Buckeye	Butternut
Mahogany	Elm	Red Gum
Ash	Willow	Philippine Mahogany
Tupelo	Basswood	Red Oak
Walnut	Cottonwood	Soft Maple
Pecan	Cypress	
Cherry	Black Gum	
Good	Poplar	
Chestnut	Hackberry	
Magnolia		
White Oak		
Hickory		

Manufacture of Shuffleboards

We are investigating the possible production of shuffleboards. Can you tell us about their general construction and finish?

Most shuffleboards are made of laminated construction and a top wearing surface of hardwood, usually hard maple. The usual length is from 16′ to 20′. Long blocks, with edge grain exposed, making up the playing surface are usually laminated with a lower grade wood for the base, a dividing core, and a good stable hardwood, like hard maple, to provide the true level plane surface required to give the shuffle weights accurate travel from end to end. The shuffleboard playing surface is usually waxed and highly polished over a top coating of heavy-bodied lacquer or spar varnish.

How to Tilt Casegoods

A recent visitor mentioned a work-holding device used in a conveyorized finishing department which permitted furniture cases to be tilted and turned easily and quickly for sanding and rubbing operations. What can you tell us about this device?

From your description, it is assumed that you are referring to the Roto-Tilt table which is used in similar applications. In use, the

"Our NEW Union Hi-Frequency Shuttle Press saves time... produces a superior product,"

says M. E. Schuler of S. S. & S.

S. S. & S. Manufacturing Co., Inc., Evansville, Ind., is a well-known manufacturer of high-quality radio, TV and hi-fi cabinets, producing more than 100,000 units a year for leading names in the communications industry.

A key machine in this firm's operations is its new Union Hi-Frequency Shuttle Press. According to Production Manager M. E. Schuler, this press "saves in over-all job time while producing a superior product . . . results in a more permanent, more moisture-resistant bond . . . and permits using the jig method of framing for increased production at lower labor costs.

"Our Union Hi-Frequency Shuttle Press," states Mr. Schuler, *"saves 50%* on sanding belt replacement alone, and we use a lot of belts! This is because 'slop-over' glue cures completely and eliminates belt gumming."

The Union Hi-Frequency Shuttle Press has a standard working platen area of 26" x 68" . . . with larger or smaller sizes available. It is adjustable up or down, with a maximum opening of 4", to compensate for varying stock thicknesses.

Its high production is obtained through 2 shuttles linked end to end, forming the platen surface. The surface moves back and forth through the press area, permitting loading and unloading on one shuttle while the other is holding a load in the curing process. (Automatic shuttle operation is optional equipment.) When equipped with a standard 5-KW generator, it has a curing capacity of 500 to 600 sq. in. of glue line per minute.

Write today for full details on this new high-frequency press. See for yourself how it can lend itself profitably to your own woodworking operations . . . by improving product quality . . . by cutting operating costs . . . by increasing production.

UNION-WALLACE-INDIANA . . . A MANUFACTURING GROUP DEVOTED TO PRODUCING THE HIGHEST QUALITY WOODWORKING MACHINES.

THE
UNION TOOL CORPORATION
WARSAW, INDIANA

900 N. DETROIT ST., WARSAW, INDIANA

furniture piece mounted on this device easily presents each work surface to the best position for the worker without bending over, stooping down or reaching far to contact the surfaces. It is reported to handle narrow cabinets and cases up to 70" wide with equal facility. Padded clamps are used to hold the load firmly without marring or scratching any of the surfaces.

How to Setup Incentives

We are currently evaluating our plant supervisory force prior to establishing an incentive plan. Since their functions are not confined solely to volume and quality of production, we would appreciate advice on what basis or rating is used in other plants.

A furniture plant which has an excellent record in this field uses the following yardstick to rate its supervisors:

1. Ability to plan work and obtain results.
2. Ability to train workers in specific duties.
3. Ability to handle unusual problems in everyday work.
4. Interest in personal development.
5. Interest in broad problems concerning the plant organization and production.

Wood Water Mains

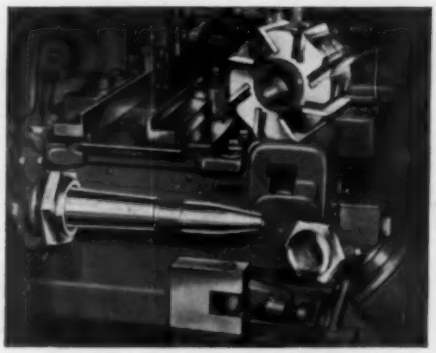
Workmen in our city recently dug up some wooden water mains said to be more than 150 years old. The wood was generally solid, but the connections were either destroyed in the digging or had deteriorated. What sort of connections were used for these wooden water mains?

While they may have differed somewhat in different installations, wooden water mains were usually made of logs, 10′ long and 1′ in diameter, in which a 6" hole was bored through. The first wooden water mains are said to have been connected by wooden collars but later the logs were connected by 6" cast iron sleeves which usually extended a minimum 3" into the mouth of each connecting log.

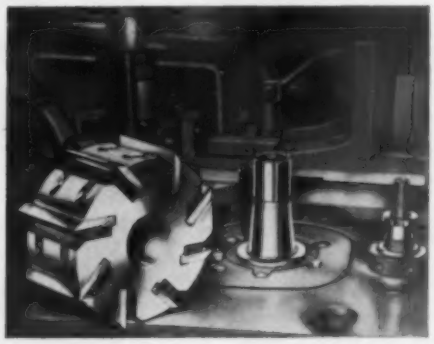
● ● ●

Serving the Industry Since 1852

It's Masterful!
This 6" LAG BED ELECTRIC MOULDER

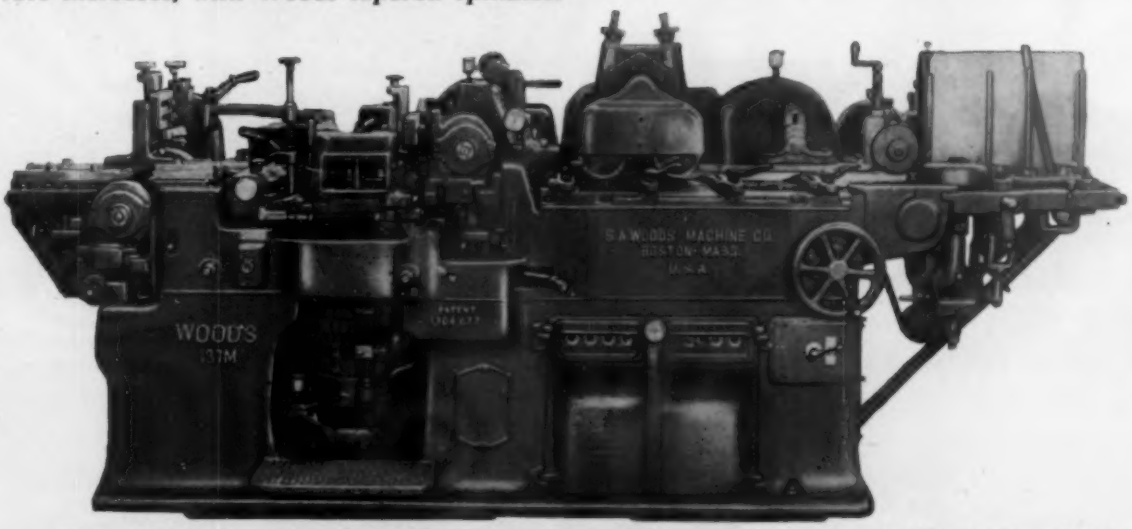


• Bottom Tapered Spindle



• Side Tapered Spindle

The new Woods 137MT Moulder Series bring to the Industry, a new concept in spindle design, the Woods *tapered spindle*. Your production costs go down, your production rate increases, with Woods *tapered spindles*.



Cutterhead sleeves and bushings are eliminated, securing more rigid cutterhead fit on spindle. Removal and mounting of cutterheads becomes a matter of moments—a simple and easy operation. Let us tell you more about Woods *tapered spindles* and the many other exclusive time and money saving features built into the new Woods 137MT Moulder Series. Shown with hopper feeding attachment. Feed rates to 160 FPM.

Send today for your copy of the new 137 catalogue

S. A. WOODS MACHINE CO.
27 DAMRELL STREET
BOSTON 27, MASS.

Branch Offices: ARK., Little Rock • CAL., San Mateo • N. C., Greensboro • N. Y., Mt. Vernon
ORE., Portland • TENN., Memphis
Canadian: B.C., Vancouver, Akhurst Machinery Co. • ONT., Galt, Canada Machinery Co.
Export Dept.: United States Machinery Co., 90 Broad St., New York City

A roundup of day to day in-plant problems and how they were handled by management men. Each incident is taken from a true-life grievance which went to arbitration. Names of some principals involved have been changed for obvious reasons. Readers who want the source of any of these cases may write to WOOD WORKING DIGEST.

When is a crackdown on lateness unreasonable?

What Happened?

The company had had a problem with lateness from way back when. It had tried warnings, pay deductions, various kinds of penalties—with no effect. So out came a new rule: Any worker who was late more than 11 times in a year got fired. "Late" meant arriving after the official starting time of 8: A.M. No exceptions! When Anna Gedman turned up tardy for the twelfth time in seven months, she was discharged. Anna hollered "Unfair!" She complained:

- Nobody has ever before been fired for as few as 12 latenesses a year. In the past people had been allowed 24 latenesses a year, and sometimes even 36—without any penalty at all.
- It wasn't reasonable not to give an employee a talking-to or warning. Just 12 latenesses and out you go!
- Two of those 12 times I was only one minute late, and another time only two minutes late.

To which the company replied:

- Maybe 36 latenesses a year were allowed without penalty in the past, but that doesn't mean we have to keep on allowing it.
- A number of workers keep their

HANCHETT MODEL DN knife grinder

NEW! *fully automatic — low priced*
KNIFE CAPACITY — *32" to 108"*
MODEL DN FEATURES:

1. Timing belt drive. Positive — quiet — non-slipping.
2. Eliminates all gears (Requires no lubrication).
3. Free from vibration and reversal shock.
4. 100% Anti-Friction Bearings.
5. Precision ground ways for accuracy.
6. Guarantees perfect machine alignment.
7. Force feed lubricated ways.

Other models
AK EXTRA HEAVY DUTY
GK HEAVY DUTY

FINEST KNIFE EDGES

Write for complete information

HANCHETT MANUFACTURING COMPANY
World's Largest Manufacturer of Knife Grinding and Saw Sharpening Machinery
MAIN OFFICE — Big Rapids, Michigan WEST COAST — Portland, Oregon

We've heard from EVERY*user of a BELL "300" Electronic Gluer

"... the best machine that could have been purchased for our operation."

"It saves us the full time of four men."

"If our production should demand another gluer, we would certainly install another Bell."

"The maintenance of the machine is negligible."

"... 100% satisfied with our No. 300 and also with the wonderful service that goes along with the machine."

"... Careful check on our production costs and find that two men are able to produce the equivalent of what formerly took eight men to do."

100% are Satisfied
100% are Enthusiastic

"... very satisfactory results with this machine and have found that it is reducing our gluing costs as much as 40%."

"... make 95% of our glued-up stock into exposed parts. Your No. 300 has changed our gluing work from a chore to a pleasure."

Excerpts shown on this page are from letters of a portion of Bell "300" users. Copies of complete letters are available upon request.

No other high frequency edge bonding machine can match this performance record!

Bell WOODWORKING MACHINERY

THE BELL MACHINE CO.
71 Jackson Drive, Oshkosh, Wis.

tardiness down to no more than four times a year. We think twelve is ample.

- A system of warnings proved fruitless. The employees were told unmistakably and positively that 12 latenesses in a year would be cause for dismissal. They were told to check with their foremen to find out how their lateness records stood.
- They were told to keep a record themselves for their own protection. Considering all this, "12 latenesses and out you go!" is reasonable.
- Workers were told that anyone arriving after 8: A.M. would be given a tardy mark. One minute past eight is as truly late as fifteen minutes past eight.

Was the company:

RIGHT ☐ WRONG ☐

What Arbitrator Russel Smith Ruled:

"It is apparent that the new rules were quite drastic and hardly to be anticipated. Not only was the number of instances of tardiness permitted during a 12-month period sharply reduced. In addition, the system of warnings was entirely eliminated, and the employee was required to keep his own record. A single penalty was provided for, namely, discharge, without regard for individual circumstances. Thus, in the present case, the fact that the grievant was tardy on two occasions by only one minute, and another by only two minutes, has been treated as immaterial. Under all the circumstances, including particularly the history of the treatment of tardiness, I am forced to conclude that the rules are arbitrary and unreasonable. I do not hold that it is necessarily unreasonable to define 'chronic tardiness' in terms of a fixed number of tardinesses in a given period, but I think it is unreasonable to do so if this number is reduced from the number allowed in the past, if notices are not issued to the employee, and if the rules make no provision for a graduated system of penalties—with a lesser penalty or penalties preceding discharge. The grievance is sustained."

When can't you fire an employee for reporting to work drunk?

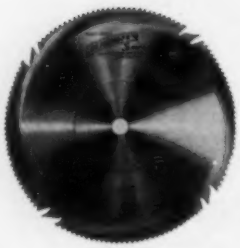
What Happened?

When Jim Benson turned up for work on a particular Monday morning, the guard at the gate thought he'd "had a few." When Jim punched in, his foreman was sure of it. There was alcohol on his breath, his eyes were bloodshot, his speech was slurred and he weaved when he walked. All in all,

CHECK-MATE YOUR SAWING PROBLEMS WITH **HEINEMANN** SAW BLADES

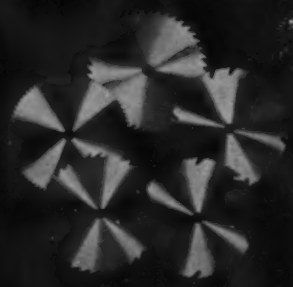
CARBIDE TIPPED SAWS
THE "KINGS ROW" OF SAWS
Unexcelled performance. Custom-built and perfectly sharpened for each particular application. Perfectly balanced and tensioned. For cross cutting, ripping or mitering of all materials that can be sawed. Available either for wood or non-ferrous metals.

HARD-TIP SAWS
THE "WORK-HORSE" SAW
Now deep-hardened for easy re-sharpening, yet so economical to buy and stays sharp so long, it's practical to replace this blade when it dulls to save re-sharpening costs. Saves 50-60% of your sawing costs.



PLY-SAWS
"THE CHOICE OF CRAFTSMEN"
FOR FINE CABINETRY, PLYWOODS AND VENEERS
For extremely smooth cutting of plywoods and veneers, for fine cabinet and finishing carpentry, rely on the excellent results of this blade.

HEINEMANN SAWS
A SAW TO "CHECK-MATE" ANY PROBLEM
A saw blade to meet any job application. Blades with quality, satisfaction and performance "built-in" by the hand of skilled saw makers. Saw blades to meet your most critical standards and at competitive prices.



HEINEMANN SAW CORPORATION
CANTON 6, OHIO

SEND TODAY FOR CATALOG No. 23
It contains information and prices on our complete line of quality products.

the foreman didn't think Jim was fit for work that day. He didn't make a big production of it—just told Jim to go home. Jim went. When he returned to work on schedule three days later, he was told that he had been fired for reporting to work drunk. Jim insisted his firing was unjustified:

- I hadn't been drinking. I'd taken some medicine for a cold, that's all. And my eyes are always bloodshot because of an accident I had a few years ago.
- The foreman should have told me right then that he thought I was drunk and that he was going to hand out a penalty. Not three days later, when I don't remember who I met on the way out who could be a witness that I was cold sober.
- I'm 55, and I've been with the company for 12 years. At my age, getting "canned" is pretty darned serious, and it shouldn't be done to me without more proof.
- Usually, if they think a man is drunk, they send him to Personnel, so other people can see if he is drunk, not just the foreman.

The foreman didn't see it that way at all:

- The guard at the gate thought Benson was drunk, too. Neither of us was born yesterday. We've had plenty of experience with drunk workers, and we know when a man is drunk and when he isn't.
- Benson had been warned for drinking before. He'd also had a five-day layoff for reporting out sick when all the time he was lapping it up in a tavern. There wasn't any need to spell it out for him this time.
- The Personnel office was closed that day, so I couldn't send Benson there.

Was the Foreman:

RIGHT ☐ WRONG ☐

What Arbitrator Carl Warns Ruled:

"Mr. Benson should have been told at the time he was sent home that he was indefinitely suspended because of intoxication, or that he was discharged. Union officials in the plant as well as other management personnel should have been notified in order that the degree of proof customarily obtained be available to support the serious charge. Of course, in those cases where an employee is obviously drunk, inarticulate and abusive, a full hearing prior to leaving the plant is not expected. The evidence does not reveal that the grievant was in that condition. Under the necessity for substantiation of the serious charge, Mr. Benson's prior layoff, although worthy of consideration, is not sufficient to justify his termination of employment. He shall be reinstated without back pay but with full seniority rights."

● ● ●

B.O.W. Plans Made

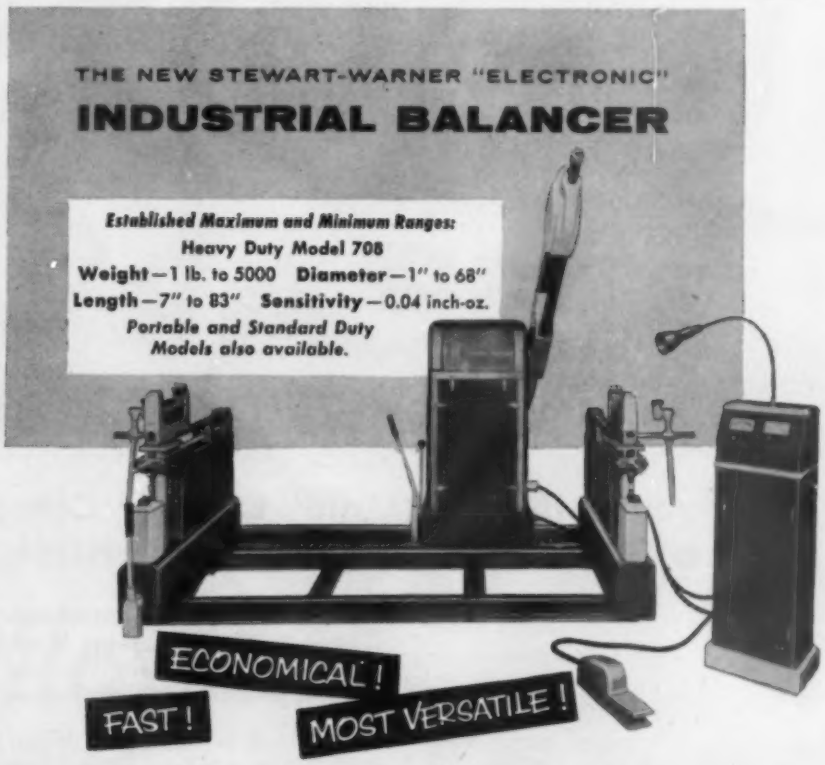
A "Parade of Offices" of sleek, contemporary wood office furniture and paneling will be launched in some 30 major cities throughout the country in September, according to Robert A. Spelman, executive director of the Wood Office Furniture Institute.

The "Parade of Offices" is part of the "Better Offices in Wood," or B.O.W., promotion campaign sponsored by 14 trade organizations in the wood industry. Sponsors include the Hardwood Plywood Institute, the Wood Office Furniture Institute, several hardwood and lumber associations and the National Paint, Varnish and Lacquer Association.

"We tested the idea of a cooperative campaign to promote office modernization in Minneapolis, Minn.," Spelman said, "and it was a great success. The whole town cooperated. Owners of 25 of Minneapolis' most attractive offices consented to have visitors see and envy them. The mayor proclaimed the week of our Better Offices in Wood test-run 'Office Improvement Week'."

THE NEW STEWART-WARNER "ELECTRONIC"

INDUSTRIAL BALANCER


Established Maximum and Minimum Ranges:
Heavy Duty Model 708
Weight—1 lb. to 5000 Diameter—1" to 68"
Length—7" to 83" Sensitivity—0.04 inch-oz.
Portable and Standard Duty Models also available.
ECONOMICAL!
FAST!
MOST VERSATILE!

Wide Range Use—Handle single-piece, short-run and long-run production, as well as maintenance of your own machines.

Fast set-up! Adjusted to handle any job in less than two minutes.

No special tooling required! New design permits change-over from one job size to another without special fixtures.

Easy to operate! Semi-skilled workers can learn in one day.

Precision sensitivity! Balances both kinetically and dynamically with maximum sensitivity.

Lowest Cost! Cuts cost of balancing *per piece* so low that even smallest shops can now afford their own precision balancer.

FREE

Write for illustrated brochure on industrial balancing

STEWART SW WARNER

STEWART-WARNER

1840 Diversey Parkway, Chicago 14, Illinois

STEWART-WARNER CORP.
Dept. TT-77, 1850 Diversey Parkway
Chicago 14, Illinois

Please mail me all the facts about Stewart-Warner Industrial Balancers.

Name.....

Company.....

Address.....

City.....Zone....State.....

Trust your AIM*... Bradley Lumber Company did...

Acme Steel Strapping Machine bundles flooring

BRADLEY LUMBER COMPANY of Arkansas, Inc., Warren, Ark., uses Acme Steel F-1 Strapping Machines to bundle quality hardwood flooring. The result: Important time and material savings with more secure, better protected product packages for Bradley customers.

Acme Idea Man, E. E. Drewry helped Bradley Lumber Company as he does many shippers and receivers of lumber and other products.

With each F-1 Strapping Machine, Bradley applies over 4,000 straps to nearly 29,000 board feet per day. Automatic features allow the F-1 machine operator to secure the bundle with as many steel straps as desired, by push-button control. Steel strap is automatically applied to pre-determined tension, cut without waste, and the ends instantly joined with spot welds. Bundles stay tight, and finished surfaces are protected from marring. (Idea No. S2-9)

***Trust your Acme Idea Man** to find the answers to your packaging and shipping problems. He can discuss the advantages of the Acme Steel F-1 Strapping Machine and how it aids shipping, storing, handling and inventory. Write: Dept. WES-77, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Ltd., 743 Warden Ave., Toronto 13, Ontario.

ACME STEEL STEEL STRAPPING

MILLWORK MANUFACTURERS!

Booming business and dud prospects don't go together . . . knowing where the "live ones" are—that's what you need!

Write for a better way to make your profits go up

Advance information about new projects makes the difference between boom and bust when you do business with the construction industry. Dodge Reports not only give you early notice—they help you follow through by telling you whom to contact and when the job is out for bids (even who's bidding) on just the kind of work you want. If you'd like to know how to pin-point the "live" prospects that will help make your profits rise, just read and mail this coupon today.

TO: **DODGE REPORTS,** DEPT. 155, 119 WEST 40th STREET, NEW YORK 18, N. Y.

Yes! I'd like to pin-point my prospects by knowing in advance who's going to build, what, when, where.

I want to know whom to contact and when to submit bids.

I'd like to see some Dodge Reports, and I'd like a copy of your booklet that tells how to use this accurate, daily, up-to-the-minute construction news service.

I understand that I can pick just the area in the 37 Eastern States and the type of construction activity that interests me. Also, that I won't have to wade through mounds of data to find the information I need.

I'm interested in General Building ☐ **House Construction** ☐ **Engineering (Heavy Construction)** ☐

in the Following Area: _____

NAME _____

ADDRESS _____

CITY _____ _____ ZONE _____ STATE _____

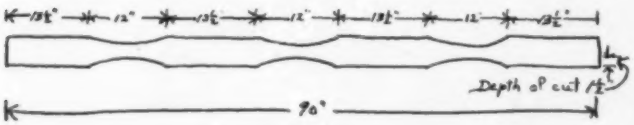
Dodge Reports

For Timed Selling to the Construction Industry

WHAT DO YOU SAY?

Reader asks how to make cut-outs in green hardwood 6" x 6" timbers. Here are suggestions from several experts.

"We are trying to determine the best way to make six curved cutouts, as sketched, in green hardwood 6" x 6" timbers to serve as supports for 30" pipe. We must be able to make them at the rate of approximately 30 per hour. We would appreciate your ideas on how this may be accomplished and what machinery, if any, is available to do the job."



Heavy Duty Bandsaw May Solve This Problem

A similar problem was solved by the use of a small heavy duty bandsaw mounted on grooved rollers which engaged a circular track of the proper radius and properly positioned with reference to the timber to make the required cut. This bandsaw circular station was located midway of a roller table, equipped with stops on the back fence used to provide straight alignment of the timber. The timber was moved up after each cut-out was made until the last one on one side was finished. The timber was then turned over and cut-outs on the other side were made at the bandsaw on the return trip.

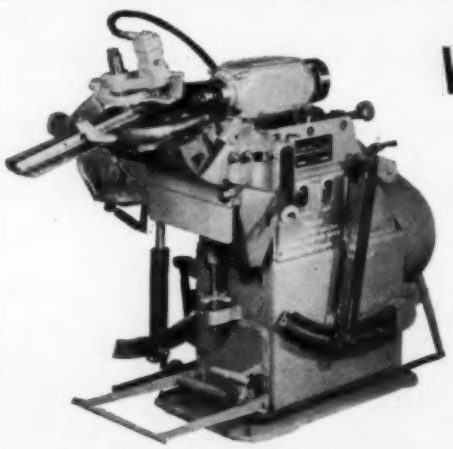
It would also be possible to make these cut-outs with a large diameter cutterhead, but the arrangement would be more expensive and more dangerous for the operator.

This bandsaw method of making cut-outs should greatly exceed the desired production of 30 per hour.

Additional suggestions appear on page 92.

Should any of our readers have other suggestions on solving this cut-out problem, let us hear from you. If possible, we shall use your answers in a future issue.

If you have a problem in machining, assemblying, finishing, etc., send it to us. We shall try to find answers for you.



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Morgan Mfg. Co. (dimension stock) cuts rejections to less than half of previous amount.

MERSMAN

Mersman Bros. Corp. (tables) eliminates 10% to 20% stock loss due to warping and checking.

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RWAY Furniture Co. gets better glued joints, better finishes, less stock loss.

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Vilas Furniture Co. saves $5000 to $6000 annually by eliminating losses of goods in production and storage.

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Because an Armstrong unit automatically gives you constant, thorough humidification, you eliminate warping, checking, glue-joint failures, poor finishes, etc. You save on materials, time and labor due to fewer rejections in every phase of your work.

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For complete information, call your local Armstrong Representative or mail the coupon to:
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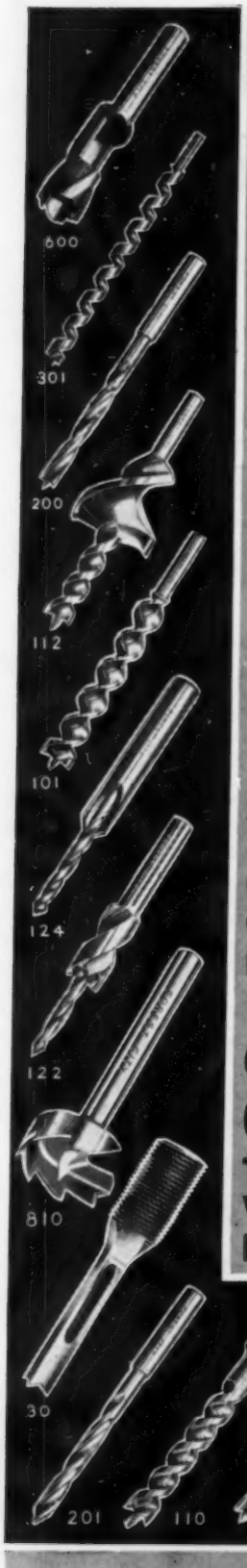

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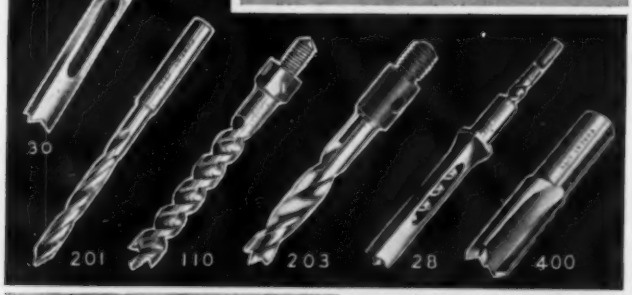

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Thickness Planer Could Be Used

One side could be done at a time on a thickness planer with a cam action to the cutterhead which would cause it to raise and lower at the specified intervals. However, that would be a slow operation.

Perhaps a special machine would be best. This would consist of a bed on which the part could be clamped with two vertical cutterheads on a roll which would operate in and out from a template placed above the work part.

Carving Machine Suggested

This work could be done on a carving machine. However, when the specifications call for green hardwood of 90" long, we immediately have visions of the timbers twisting and warping to a degree that would make it impossible to attain any kind of accuracy. A piece of green hardwood 6" x 6" x 90" would weigh approximately 136 lbs., and the task of handling 30 timbers of this size per hour, getting them in and out of the machine, would present quite a problem.

We believe that a carving machine may be the answer and would be glad to work on one for this particular operation.

Several readers recommended the bandsaw operation for making these curved timbers. All of the answers were sent on to our reader and he has been able to solve his problem by adapting some of these answers.—The Editor.

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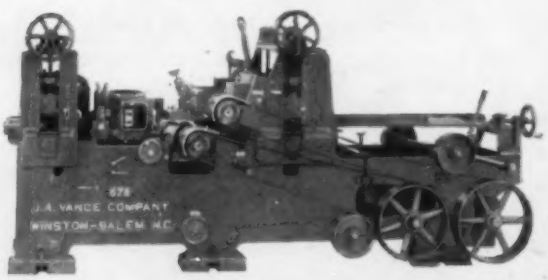

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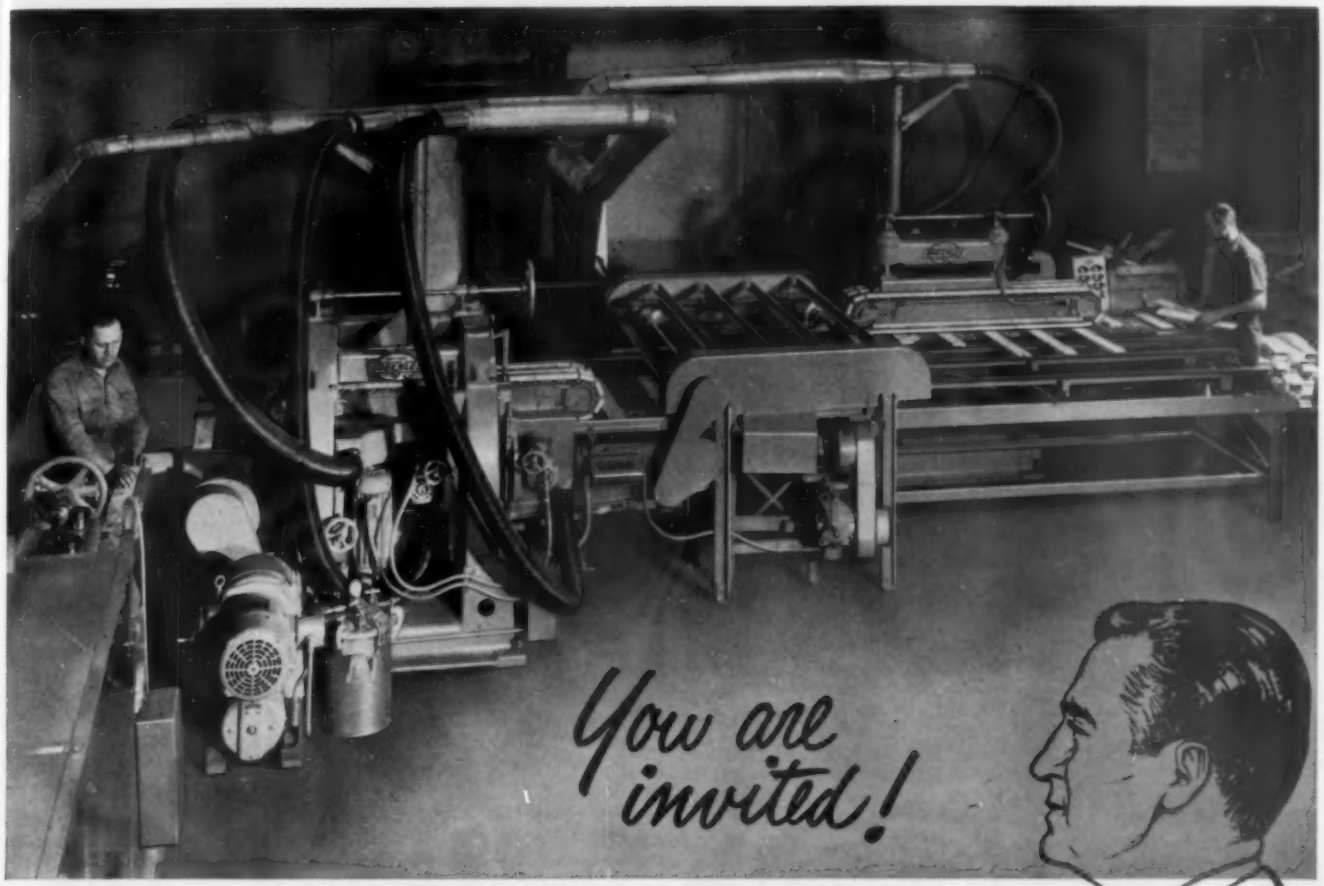

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You'll see how the joints are precision machined . . . how they are glued, assembled and electronically cured. You'll see assembled stock automatically cut to predetermined lengths.

Whether finger-jointing fits into your immediate plans or not, we sincerely believe it will be well worth your time to spend one or two days investigating this newest development in the field of woodworking. Other Greenlee machines will also be available for your inspection.

Plan your trip to Rockford now!
Just write or phone.
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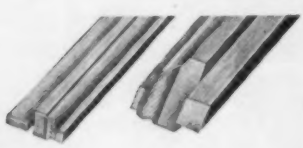

Woodworkers' Tool Works

224 S. Jefferson St.

Chicago 6, Ill.

Union Vacuum Lift Solves Materials Handling Problem

The application given here could be adapted for other utilizations in a variety of woodworking plants. Much larger sheets than the panels described here, can be lifted by this equipment.

A good example of how modern, high-speed woodworking machinery lends itself to mass production methods may be found in certain handling and coating operations at the Detroit trim plant of the Ford Division, Ford Motor Company.

Located at Highland Park, a Detroit suburb, this plant makes decorative trim and performs related functions for the Ford Division's automobiles. One of the related functions is the treating of car door panel boards so that the trim can be electrically bonded to them.

In the past, pre-coated panels were purchased from an outside source. About 15 months ago, however, company production line engineers tackled the problem of reducing panel cost. After careful investigation, the engineers concluded that the most practical cost-cutting method was to coat the panels in their own company shops.

Since the panels had to be purchased from an outside source in any case, the solution to the problem lay largely in the area of releasing normally used manpower, for the coating process, to other duties. In other words, automatic handling.

A completely modern production line setup was installed for this work. This consists of conveyor systems, vacuum-type lifting mechanisms, a high-production roller coater and mechanized delivery of the panel pallets.

The operation today works as follows:

Being purchased from outside, the panels are already cut to size when they arrive at the plant. The sizes vary in area but are about .100 inches thick. Average weight runs approximately two pounds per panel.

Two stacks of these panels are placed on each side of a Union automatic vacuum lift. The vacuum lift's pickup arms shuttle out and descend on each stack, and suction cups are automatically actuated as they contact the top panel in each stack. The pickup arms then raise the panels to the proper height, shuttle back to the conveyor and release them on the conveyor belt.

The conveyor carries the panels to a Union roller coater where resin is applied. The panels are then sent through an oven and the resin is cured. Thus the process is completed

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For radial or swing saws. SAVE MONEY, time, labor and lumber. Stops are quickly put on or off without "threading" or removing bar. Finest made. Cost less. Write

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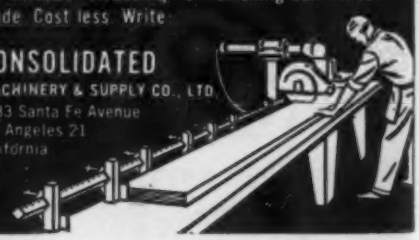
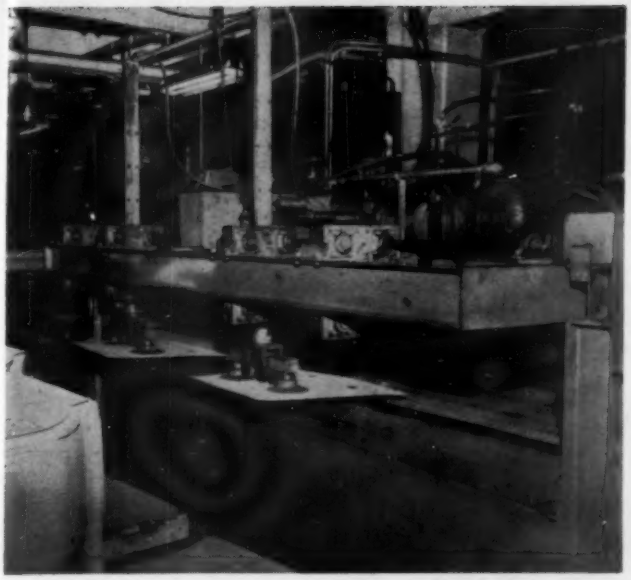




Vacuum lift has picked up panel from stack and is now placing it on conveyor to the Union roller coater.

insofar as the finished panel has now reached the stage where it was originally purchased from the outside source.

Later, as a part of the plant's production work, the panels are sent through several other Union roller coaters which apply pressure-sensitive latex in preparation for trim bonding operations.

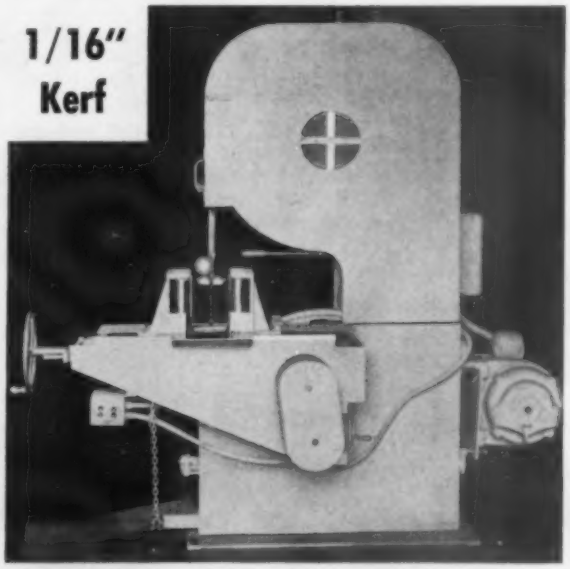
The handling and coating of the panel are timed sequences to give exact control of the cycle. Considerable versatility is permitted in this respect, because the Union automatic vacuum lift can be adjusted for different cycle speeds. In this installation, usually four complete sets of panels are handled per minute, but six sets can be run if required.

This installation of modern production line equipment has lived up to the original expectations of the engineers.

One of the big savings made by the Union automatic vacuum lift is in having panels moved directly from the pallets on which they are delivered. Thus they can be positioned without a separate unloading operation, which accounts for an appreciable reduction in time and labor costs.

The entire operation of the machinery has eliminated the need for two operators and has reduced the cost per panel enough to not only make it practical but also profitable to perform the operation at the Ford plant.

When Writing Advertisers Please Mention WOOD WORKING DIGEST



NEW! XL KERF-SAVER

This band resaw—1/16" kerf—means more profitable production . . . More saleable lumber. Not big—BUT—saws smooth and straight . . . Gets ALL the lumber out of every stick processed. Better grade recovery . . . better sawing in all grades. Minimizes waste . . . reduces down-time . . . returns greater net profit.

Specifications

- Wheels—spoke—36" diameter—2" face to carry a blade up to 2½" wide.
- FEED WORKS:
  - —Maximum feed roll opening—16"-8" inside rolls, 8" outside rolls.
  - —Feed Speed—approximately 20 to 150 feet per minute.
- Feed Works will tilt to 45 degrees.
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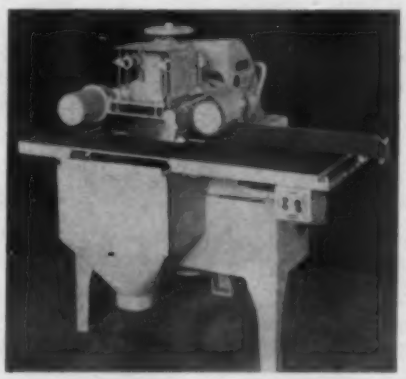

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Available Literature

Router Handbook

Here is a 40-page book about the Stanley router. It is well illustrated with more than 100 photographs and diagrams.

Complete step-by-step information as to how to use the router in making typical wood joints; in cutting a mortise and tenon; in making decorative cuts and in many other uses are included in this handbook.

Order from Stanley Electric Tools, New Britain, Connecticut.

Use postpaid card. Circle No. 4

Saw Sharpening Instructions

This bulletin "Sharpening Instructions for Your Atkins Borg-Warner Saw Chain," is fully illustrated and shows, step-by-step, how to obtain professional saw filing results by using the proper tools. The most difficult part of filing a saw chain, the booklet points out, is getting all teeth or "chisels" uniformly filed at exactly the right angle and with the exact amount of "hook" on each chisel. Depth gauges or "riders" must also be filed to precisely the right height to assure maximum efficiency.

Atkins Saw Division, Borg-Warner Corporation, Dept. C, 402 S. Illinois Street, Indianapolis 9, Indiana.

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Carbide Knives

Carbide knives and their advantages on machine planers in woodworking plants are described in Bulletin WK-100 available from Kennametal. Methods are explained for adapting present machine planers for use of these hard carbide planing knives. How this increases production and lowers costs is also described.

Write for Bulletin WK-100 from Kennametal Incorporated, Latrobe, Pennsylvania.

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Veneer Tables
Revised Edition

This book is for manufacturers, dealers—anyone who works with veneer, plywood, cut lumber, boxes, etc. It is a handy book of accurate tables for quickly determining square feet contents of veneer and the cubic contents of logs, complete to fractional units.

"Click's Veneer Tables," are not new to the woodworking industry. However, the tables have been recently revised and the fourth edition is now available from Mrs. A. Graham Click, P. O. Box W-147, Elkin, N. C.

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Radial Saws

This brochure shows 12 major types of cut for which all Delta radial saws are suitable. These include mass cut-off, 0°-to-90° right and left-hand rip, bevel plough with dado head, multiple bevel cutoff, left-hand double miter cuts, straight or angle dado cuts, horizontal end cutting, rafter notching, tongue and groove cutting, bevel ripping, and angle ripping—left or right.

Delta's super-powered motors and life-time trackways are also described in detail along with major accessories for increased production and portability.

Delta Power Tool Division, Rockwell Manufacturing Company, 471 North Lexington Avenue, Pittsburgh 8, Pennsylvania.

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Steel Strapping Machine

This colorful folder gives complete information about Model-12 steel strapping machine, manufactured by Gerrard Steel Strapping Div. The large machine, requiring only 11½ sq. ft. floor space, can tie packages from 2" high x 8" wide to 20" high x 26" wide. The standard machine is capable of tying packages up to 16" high and 22" wide. All functions are mechanically controlled and interlocked enabling a capacity of 24 ties per minute.

Model-12 uses from 14 to 18 gauge round steel strapping.

United States Steel Corporation, Gerrard Steel Strapping Division, 2915 West 47th Street, Chicago, Illinois.

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Model 800—with rolling table, 27'' travel
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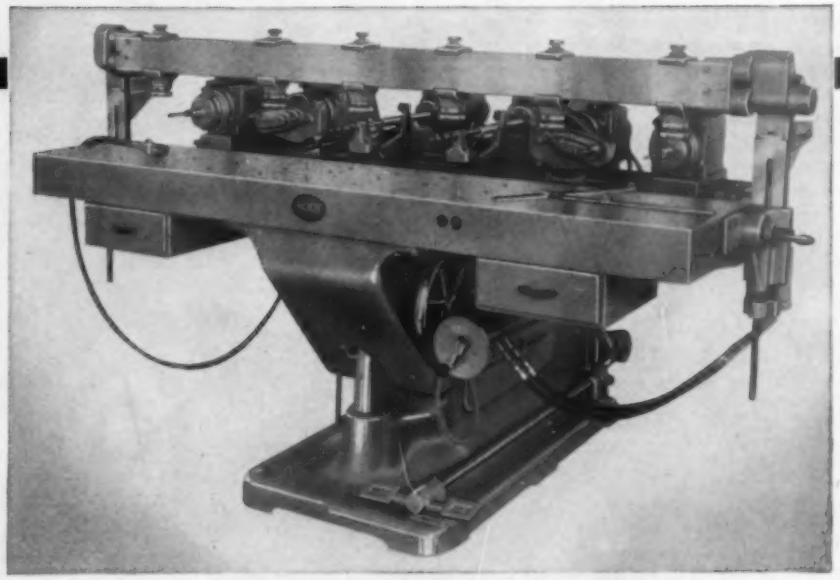


Style D-200—an unusual horizontal borer with highly flexible hydraulic feeds and motorized spindles—bores holes in multiples in edge, end or face of stock—outstanding for its many features.

Style D-150—The most modern 2 spindle, foot and hand feed horizontal borer. Has motorized spindles with radial heads for straight or staggered boring—also ball bearing feed works plus all the latest adjustments and accessories.

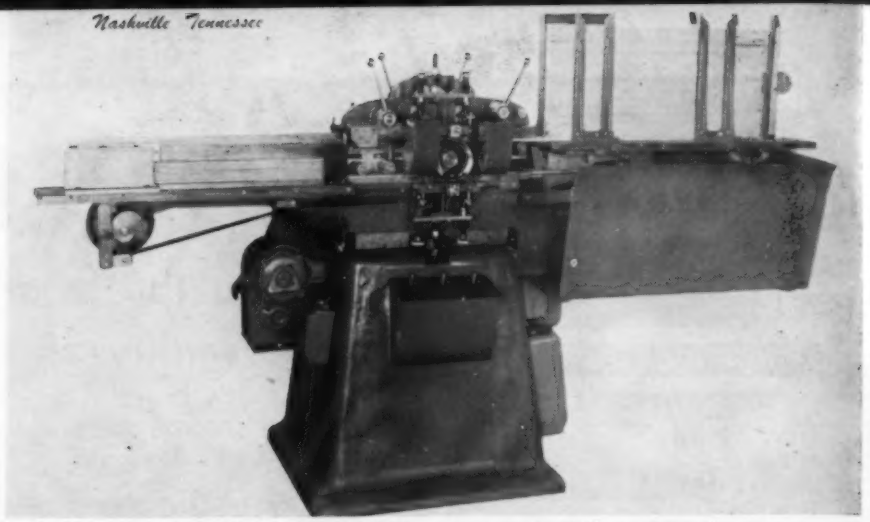
Style DM—is exceptionally versatile, has ball bearing slide ways, adjustable table, direct drive electric spindles, 2 speed motor, hand or foot treadle feed—can be fitted with multiple spindle boring heads.

Style KH-250—medium capacity horizontal borer with hydraulic feed and electric spindles, for edge and end boring. Up to 30 feed strokes per minute. Has automatic work clamp and chip blower.

B. M. ROOT CO.

YORK — PENNA.

Shaping Machine For Making Dowels



Oglesby Machine Company has built machines for the pencil industry for many years. The new shaping machine which this firm is now offering has been constructed on the same principle by adapting the hopper to take longer lengths.

The shaping machine is a single spindle molder of specialized design. The spindle is driven by a 7½ h.p. motor, 3600 r.p.m., using an endless woven belt. The spindle is turning 9000 r.p.m., and the cutting circle of the knives is 4½". The material is fed from the hopper at the right into the upper feed rollers and thence across the top of the single cutterhead. After this cut, the laths fall into the return hopper at left, profile side down, and are guided by a form fitting lower bed plate back under the same cutterhead, receiving the other half of the profile on top. The discharge is lower right under the in-put hopper.

Here are some of the advantages of the machine:

- It is fully automatic.
- The cut being taken is equal at two points, 180° apart, no outboard bearing is required. This makes removal of the cutterhead very easy.
- A minimum of tooling is required for each size or shape.

The machine has an easily adjusted variable speed—25 to 100 linear f.p.m. When making pencils or arrows with this type machine, no sanding is required. This machine will normally hold a tolerance of .001" on diameter, when a dust collecting system is removing all the chips.

The Oglesby machine can be built to take lengths from 4" to 36", and widths from 1" to 3", with diameters ranging from 3/16" to ½". It can only take one width and length at a given setting.

The Oglesby Machine Co., Craighead St., Nashville, Tenn., does not stock machines, but each one is precision built to suit the customer's needs.

In addition to the shaping machines, Oglesby offers lacquering machines with drying conveyors; burnishing machines; combination tipping and nocking machines; and hopper feeding machines.

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for heavy-duty jobs — Only $79.50

Porter-Cable's new Belt Sander has the extra power and speed you need for "all day" sanding jobs! It does the work of heavier, more expensive machines—yet it costs less than *any* comparable 3" sander on the market.

And, like every Porter-Cable tool, the new Model 153 is quality built throughout—with precision ball bearings, trigger switch, instant belt tracking device and much more.

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From a choice variety of head styles to clean sharp threads for longer holding . . . from factory-insured uniformity . . . to a wide, versatile size range*—every So-HARD Wood Screw is your assurance of quality and dependability.

**Range from 3/16 x #0 to 6" x #30 Diameter*

Available in:

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ALUMINUM • STAINLESS STEEL

FREE! Handy, distinctive 3-color heavy board wall chart showing comparative sizes of wood screws and stove bolts. Write Dept. G for one today!

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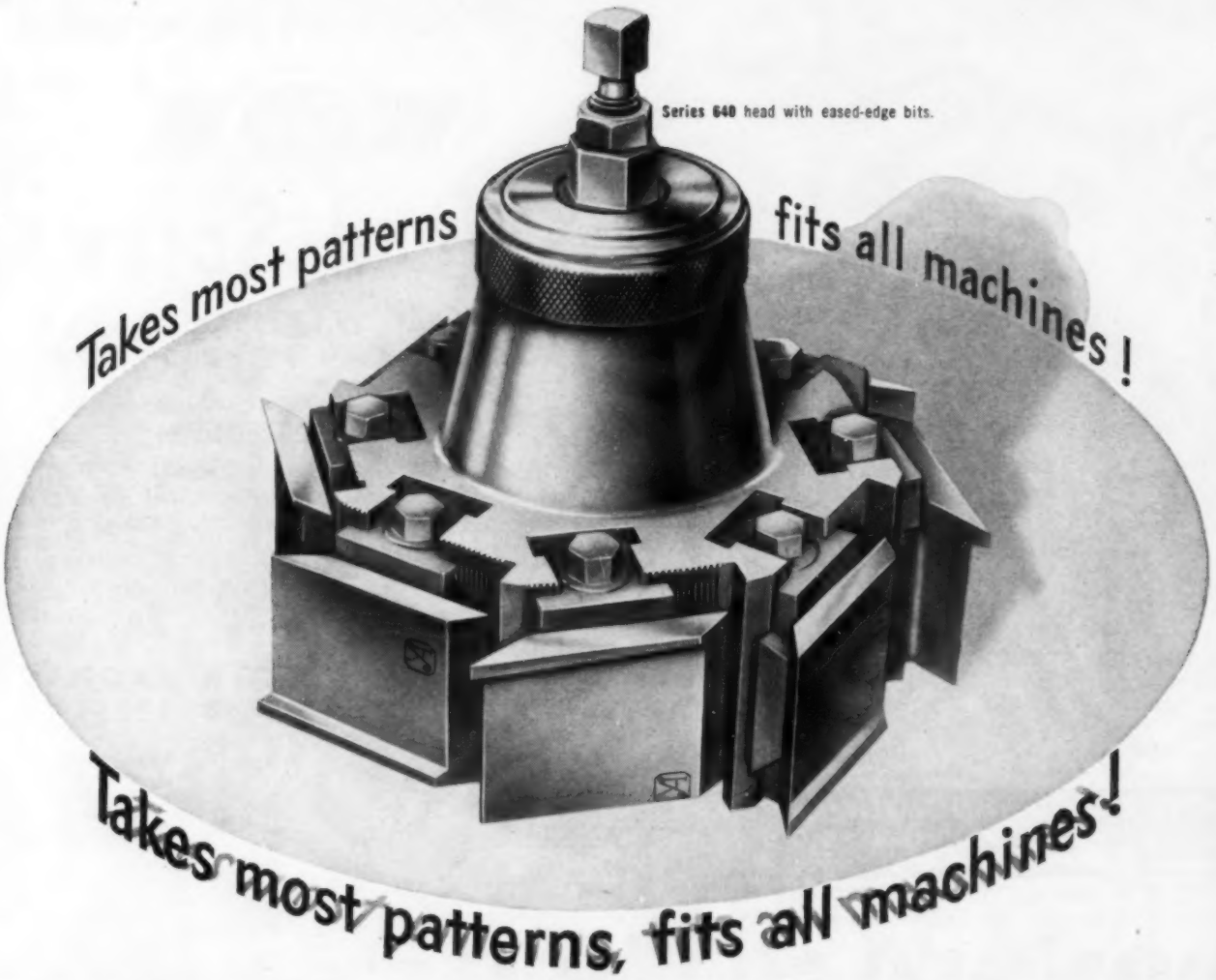

Yates-American Series 640 "K" Clamp Head

Naturally you want the most for your money, when you buy a head. And that's what Yates-American Type "K" Heads give you!

Take the versatile Series 640 shown above. It's an eight-bit, all-purpose side head with self-centering sleeve. You can use it safely at high speeds on either right or left spindles. You have less breakage — fewer hours of machine downtime.

This head has adjustable bit-clamps that fit 30° dovetails. You can adjust bits laterally. Corrugated bit-seats grip the bits securely — so every cut is smooth and chatter-free.

You can interchange innumerable patterns. And — because you can, you save the expense of the extra heads you'd need otherwise.

Catalog K-101 tells you more about "K" Clamp Heads and describes the complete line of Yates-American Heads and Knives. Write for free copy.

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BELOIT, WISCONSIN

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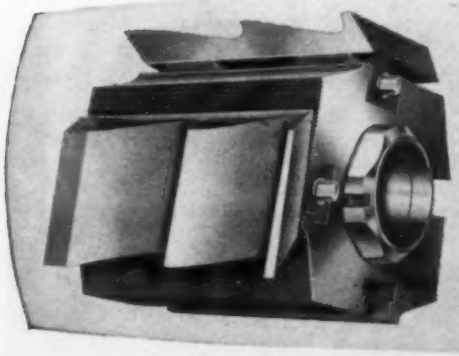
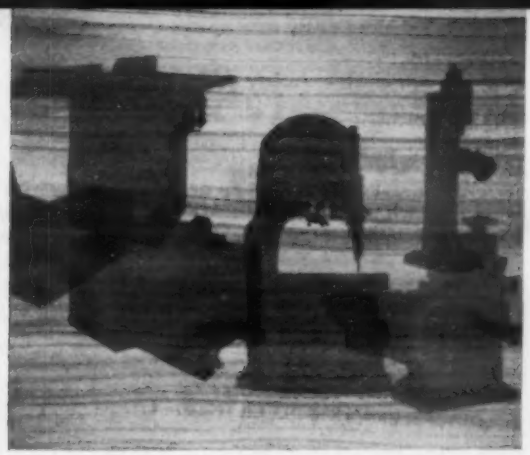
OTHER VERSATILE "K" CLAMP HEADS



Series 620 — For profile work on top and bottom moulder spindles or profile spindles of matchers. Takes both narrow and wide bits. Equipped with self-centering sleeve.

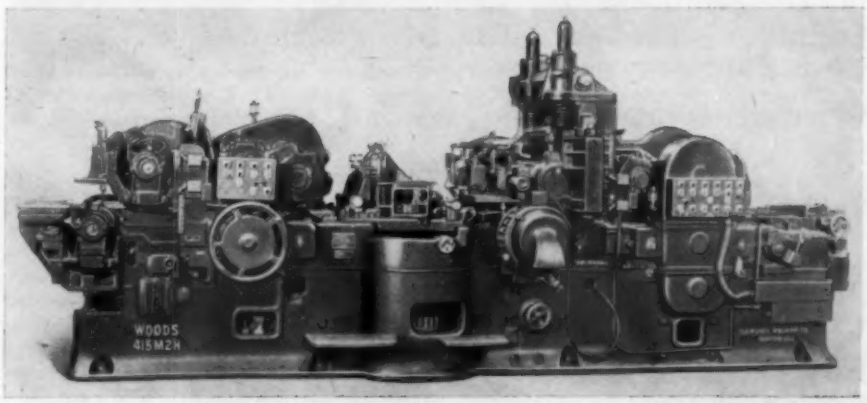
Series 630—For top and bottom spindles. With special sleeve, can be used as side head.

WW-10



equipment and supplies

Woods Planer and Matcher



The S. A. Woods Machine Company now offers automatic precision milling of stock to close tolerances to the woodworking industry.

Field tests show that the Woods 415 M2H motorized planer and matcher, equipped with the new Woods automatic hydraulic motorized top head control, will hold the variation of thickness in lumber being planed to a few thousandths of an inch, when switch is set for "automatic control."

The Woods 415 M2H motorized planer and matcher thus establishes a new concept in the method of securing and maintaining any predetermined thickness of milled lumber. A very slight deviation in the thickness brings into action the Woods automatic control, that through the use of a special motor combined with constant hydraulic pressure, instantly makes the proper adjustment of top cutterhead and yoke to re-establish the original dimension.

This distinctive advantage, exclusive with the Woods 415 M2H planer and matcher, will be of major importance to mills and manufacturers who are endeavoring to supply lumber of uniform thickness.

Complete information is available from the S. A. Woods Machine Co., 27 Damrell St., Boston, Mass.

Use postpaid card. Circle No. 11

Marcoloy Offers New Cutterhead

The new Marcoloy cutterhead is described as being designed and built to permit grinding of the knives radially within the cutterhead proper. This is accomplished by rotating the knives in their annular recesses to permit radial clearance grinding. This type of grinding can be done on straight or pattern knives with steel or tungsten carbide cutting edges.

All of the knives within the cutterhead are ground in the same position at one time. Therefore, the contour or profile will be identical and in exact location on all the knives. When the desired profile has been ground, the knives are then rotated on their axis within the cutterhead and positioned to a pre-selected face cutting angle. The selective range of rake or face cutting angle available is from 25° positive to 5° negative, plus or minus 3°, depending upon the cutting circle desired.

Further information about these new cutterheads is available from Marcoloy Inc., Springdale, Conn.

Use postpaid card. Circle No. 12

Gaynes Vibration Tester

A new compact, light-weight vibration tester — specifically designed for pre-testing possible shipping damage to such products as radios, TV sets, furniture, bulky parcel post packages, etc. —is now being manufactured by Gaynes Engineering Co.

The new model 400-V, called the "Space-Saver," occupies only 4½'x6½' of floor space, yet is fully equipped to test packages weighing up to 400 lbs. In operation, the vibration tester duplicates the punishing motions encountered in actual shipment by freight car, truck, or plane, pointing out potential weaknesses in package or product. This enables manufacturers to correct such weak points before actual shipping damage occurs, thus saving many thousands of dollars in damage claims each year.

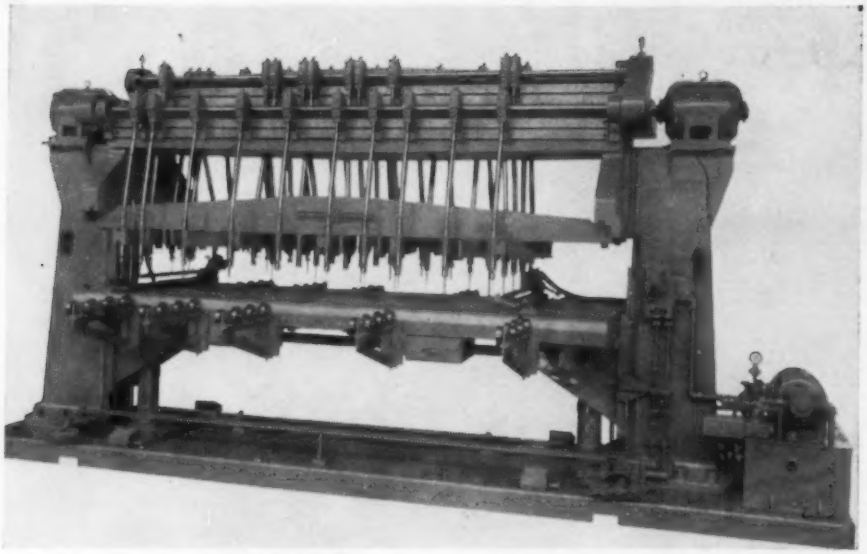
The structural steel base of the Model 400-V, rigidly braced and welded, carries a 42" by 42" table of 2" thick hard maple. Both table and front and rear drive shafts are mounted on heavy ball-bearing, self-aligning pillow blocks. Vibration or table "throw" is controlled by eccentrics on the drive shafts, which are power-driven by roller chain in proper relationship. Power is transmitted through a vari-speed drive assembly by wide V-belt and silent running Gilmer timing belt, with vibration frequency accurately controlled by hand wheel. The tester comes equipped with safety guards, adjustable back fence, synchronous timer, and 1-h.p. ball-bearing motor with all necessary controls.

Complete information from Gaynes Engineering Co., 1642 W. Fulton St., Chicago 12, Ill.

Use postpaid card. Circle No. 13

Special Multiple Borer

Challenged with the problem of building, for the first time, a large and high-production capacity wood boring machine, capable of boring up to 40 holes simultaneously in plywood panels,



the engineering staff of the B. M. Root Co., York, Pa. designed this new "2CXH-S4" special multiple borer. Incorporated in the design are many engineering "firsts" as well as a number of unusual and unique control and operating features.

Despite the machine's over-all size 17½' x 8' x 8¼' high, and 8-ton weight, it was shipped completely assembled via motor transport trailer to the customer's plant where it is being used in the production of large plywood and gypsum board panels for prefabricated home construction.

Because of its universally flexible spindles, adjustable alignment guides and clamping devices, this machine can handle in one operation, a stack of panels measuring up to 10' long by 4' wide, simultaneously boring up to 40 holes in any pattern having a minimum distance of 1½" center to center of any two adjacent holes.

Extending from either side of the machine's table are five pick-off roller brackets for infeed and outfeed of the panels. The table is hydraulically operated with an adjustable stroke ranging from ½" to 13". The maximum rate of table feed is 100" per minute, and the constant rate of return is 180" per minute.

At the top of the machine are four main spindle drive shafts, two on either side of the head rail. Each shaft is equipped with 10 adjustable upper-spindle bearings. The shafts are located in a step-up-and-in arrangement so as to allow adjustment of the upper-spindle bearings over the 10' boring length. Spindle speed is 1800 r.p.m.

The spindle shafts are driven by two 10 h.p., 1800 r.p.m. ballbearing motors, one mounted atop each of the vertical end columns of the machine. One motor drives the two shafts on the front of the machine, the other motor the two shafts on the back. A 3 h.p., 1200 r.p.m. ballbearing motor drives the hydraulic feed pump.

It is believed that with the development of this new machine many production problems involving multiple boring over extremely large areas can be solved. Root's engineers state that with slight changes in design this machine can be made to handle panels of any practicable size not only of wood but of plastics and composition materials as well.

Use postpaid card. Circle No. 14

a NEW Development . . .

GOODSPEED, pioneer manufacturer of heavy duty **back knife lathes,** proudly announce the development of a completely new and thoroughly tested concept in back knife lathe design.

THESE LONG AWAITED FEATURES NOW A REALITY . . .

1. Completely automatic cycling relieves operator of all responsibility except loading center arms and receiving finished turning.
2. Infinitely variable feed range from 0 to 30 feet per min.
3. Two Speed Feed Control permits fast feed rates on straight turning, automatic slow down on beads and other sharp contours. Automatic Return to Normal Feed Rate.
4. Pressure lubrication of ring die permits higher spindle speeds with no appreciable burning in die.
5. 12 Spindle speeds from 1700 to 7000 R.P.M. with only 4 quick change Pulleys.
6. Push Button Control from Central Station facilitates Set up.

ALL THIS AND MORE . . . has been achieved while still retaining the time tested and proven principle of the shear cut back knife at a **competitive price.** The inefficient feed screw and nut with High maintenance cost has been replaced by a pneumatically powered hydraulically controlled feed system—automatic centering and clamping of stock is achieved pneumatically. The Entire Machine is now powered by your plant airline (80-100 lbs.) or a 3 H.P. compressor can be supplied.

. . . **THE RESULTS:** A 50-75% production increase. Better turning. Fewer rejects. Greatly reduced operator fatigue.

20"-30"-40"—models are now available. May we send you sample turnings and production figures? A request on your letter head will insure your receiving the latest information on this **new** production lathe by return mail. Bulletin No. 112.

Goodspeed Machine Co.

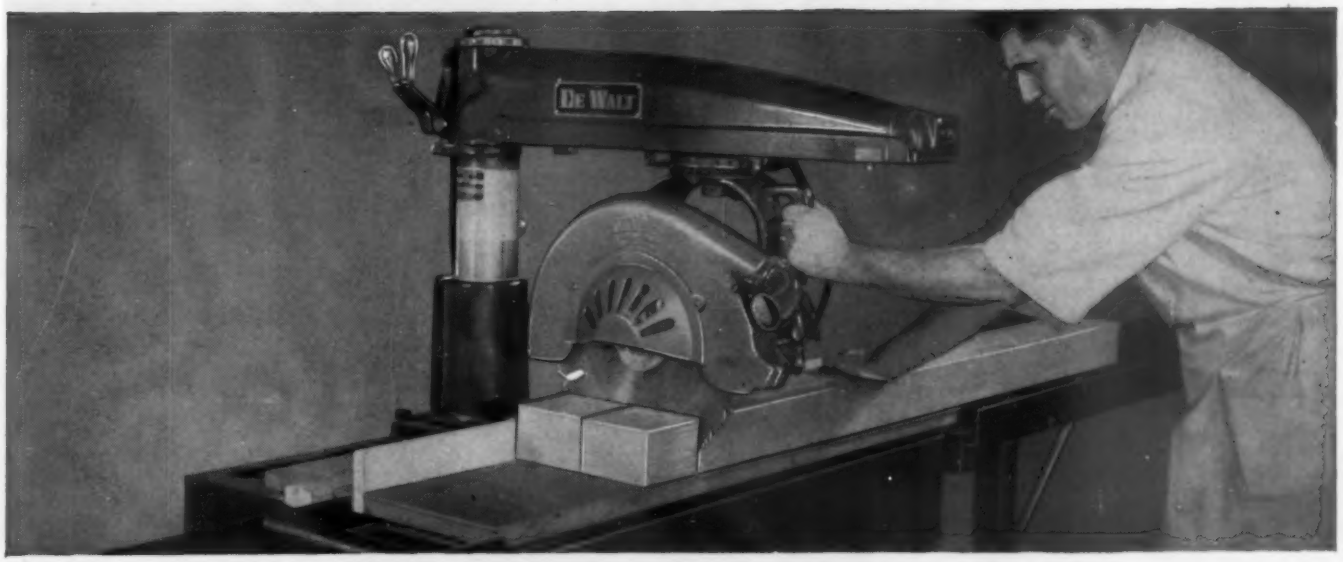
Established 1851

WINCHENDON **MASSACHUSETTS**

Portable Electronic Gluing

Weldotron electronic wood gluers are designed to do a fast gluing job at low cost. These gluers will dry and set a glue bond in up to 2" of wood in seconds and permit handling work immediately.

This high speed electronic wood gluing equipment has been used in a number of woodworking applications, including: edge bonding veneers and plastic laminates to table, desk and counter tops; setting mortised, dowelled and tongue and groove joints; setting glue blocks; applying wood paneling to joists and furring strips; patching ve-



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Send coupon for your booklet today. See how the famous AMF De Walt... the original overhead radial arm saw proved in industry for over 30 years... makes all cutting easier, faster, safer—*more profitable.*

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De Walt Inc., Dept. WD-707, Lancaster, Pa., Subsidiary of American Machine & Foundry Company
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Company_____
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City_____ Zone_____ State_____

neers, toys, sash and doors, cedar chests, patternmaking, etc.

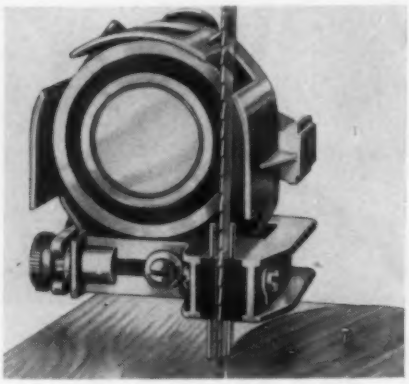
Three models are available—one is Model G-1, a hand gun weighing less than 3 lbs. A number of standard electrodes are available to use with the hand gun.

Complete information about Weldotron equipment is available from Mils Engineering Co., 780 Frelinghuysen Ave., Newark, N.J.

Use postpaid card. Circle No. 15

Micro-Guides Improved

New placement of templet pins on Carter bandsaw micro-guides now makes possible greater accuracy and speed on any type of repetitive bandsawing, according to the manufacturer.



The templet pins have been moved forward, closer to the cutting point of the tooth, making it easier to follow the templet accurately. The pins step up production with increased accuracy and also speed work by eliminating need for marking stock.

Blocks are made of hardened steel and pins of special stiff rod which will not break. The new templet pin blocks are now available for the first time on all three sizes of Carter micro-guides which are used extensively in woodworking industries to permit accurate high speed operation, reduce band saw breakage and increase safety and ease of adjustment.

Additional information is available from Carter Products Company, Grand Rapids, Michigan.

Use postpaid card. Circle No. 16

Door Sizer and Lock Mortiser

This machine is a high production machine capable of sizing, beveling right or left and completely mortising and boring for the lock set at a rate of well over 300 doors per 8 hours day, and width from 1'-4" thru 3'-0". It is all electrically controlled; electric and air powered.

In operation a door is placed in the starting position at the left end of the machine, and an electric switch is set on left or right which automatically sets the desired bevel to the left or right, by tilting the sizing cutter head.

Next the master switch is turned on and the door is fed under the sizing angle cutting head and edge sanding head, both of which start and stop as the door approaches and leaves them.

As the door reaches the right end of the machine electric controls cause clamping, cross drilling and a sequenced vertical drilling all automatic. After the vertical drill is finished it retracts out of the way for an automatic starting router operation. After the routing the knob stop at the right end of the machine is lifted and the finished door moves out as a new door moves in.

The new door was loaded in the starting position by the machine operator while the automatic operation was being performed at the right end on the preceding door.

This machine is not a combination machine and is part of a complete set of machines, consisting of power operated mitre saws for trim, power operated dado saws for jambs, electric air powered hinge routing machines for doors, and electric air powered jamb hinge routing machines plus air powered nailing jigs for jambs and trim.

This machine is manufactured by the Womack Machine Supply Co., 2010 Shea Rd., Dallas 35, Texas. Write to the company for additional information.

Use postpaid card. Circle No. 17

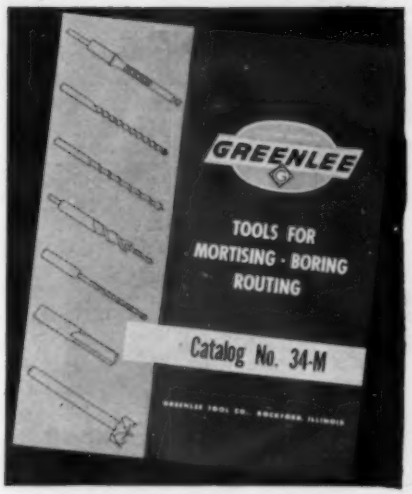
Quality wood parts by Morgan Manufacturing Co., Inc. BLACK MOUNTAIN, N.C.

We'll not swoop down and take your work... that is, unless our equipment will do a better job for you. But you are urged to ask us.

Morgan Manufacturing Co., Inc. BLACK MOUNTAIN, N.C.

The Nation's largest producer of ready-to-assemble wood parts for furniture manufacturers

...and that goes for mahogany, also!



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with profit on

GREENLEE TOOLS

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This easy-to-file, 20-page catalog is packed with information you'll find useful in ordering Greenlee Tools for all your needs. All carry the famous Greenlee guarantee of quality. See your own jobber or write us for name of a distributor in your area.

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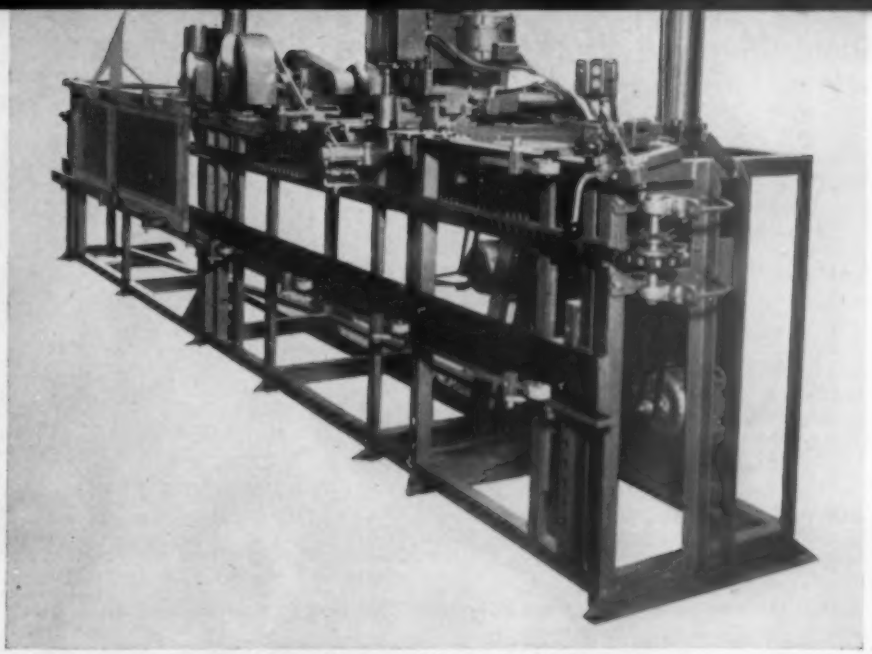
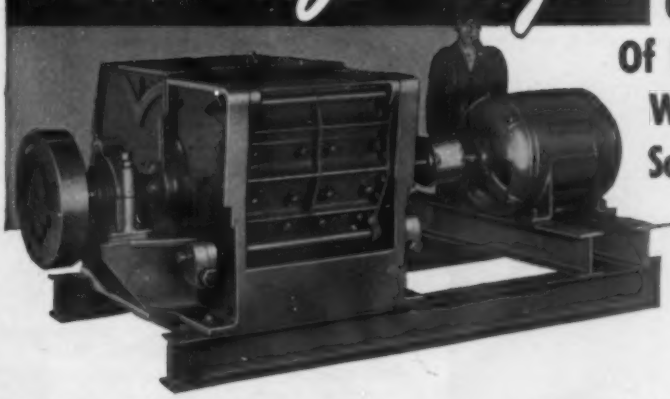


Door sizer and lock mortiser by the Womack Machine Supply Co. Complete description on page 104.

WILLIAMS "No Nife" Hogs

Save Up To 75% Of The Cost Of Handling Wood Scrap!



Handling and disposal expense of waste wood can be cut as much as 75% by reducing it to chips in a Williams Hog. If handled manually, one man alone can move as much tonnage as three men could handle if scrap is in long strips or awkward shaped pieces. If handled automatically, top efficiency can be obtained only if wood is first reduced to chips.

In chip form, waste wood produces the greatest heat value. Unhogged waste cannot burn evenly because jumbled distribution of small and large pieces restricts air flow, smothers the fire, creates excessive smoke. Hogged wood chips control passage of air for even and complete combustion, yield more BTU's.

Savings in a few months will pay for an automatic installation for conveying wood waste to stoker or boiler.

WILLIAMS LINE IS COMPLETE

• Hogging, Grinding and Shredding Machines • Vibrating Screens • Air and Mechanical Separators • Conveying Systems • Cyclone Collectors • Complete "Packaged" Plants

Write For Complete Brochure

WILLIAMS PATENT CRUSHER & PULVERIZER CO.

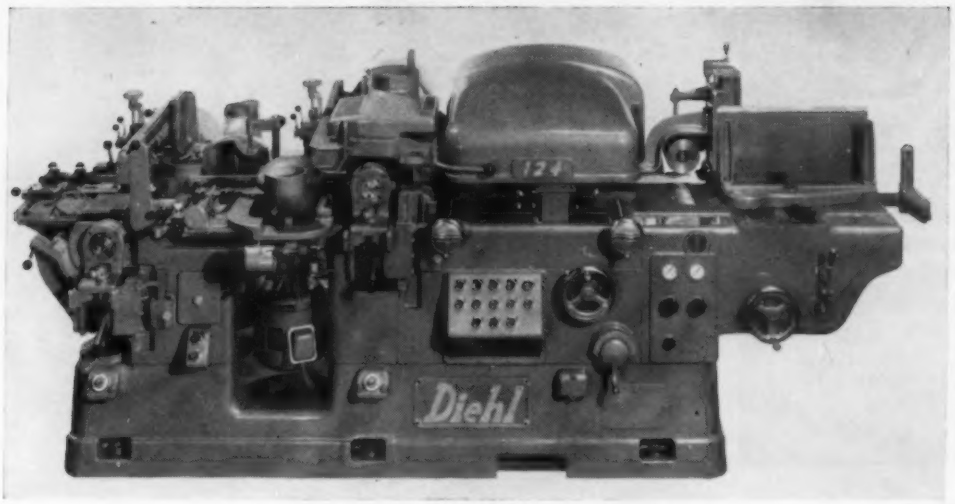
808 St. Louis Ave. ★ ★ St. Louis 6, Mo.

WILLIAMS

CRUSHERS · GRINDERS · SHREDDERS

OLDEST AND LARGEST MANUFACTURER OF HAMMER MILLS IN THE WORLD

Diehl Machine Works Introduces New Molders



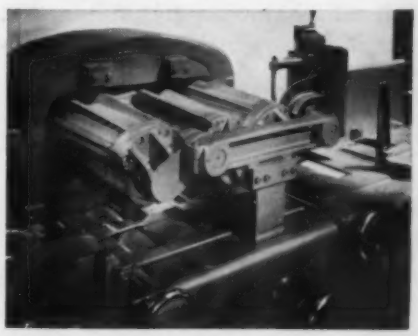
A completely new line of molders with many new, exclusive features has been announced by the G. M. Diehl Machine Works, Inc.

The new line consists of three sizes, with three models in each size. They are: Models 124, 125-T and 125-B—all 12" machines; Models 804, 805-T and 805-B—all 8" machines, and Models 604, 605-T and 605-B—all 6" machines. Models with numbers not followed by a letter designation have four cutterheads. Models with numbers followed by the designation "T" have two top heads, five in all. Model numbers followed by "B" have two bottom heads, five in all.

Hopper Feed

The hopper feed on these new machines eliminates any chains coming in contact with the stock being fed. Two rolls are on the right guide sides and are mounted on a vertical axis with the edges protruding just beyond the stock guide. The kicker roll on the left side mounts on a sliding frame and can be adjusted for various stock widths. The entire feeding mechanism is close-coupled to handle short stock.

Two clutches are in the hopper feed. One is a torque limiter clutch designed to slip when stock in the hopper is butted up against stock under the molder rolls. This compensates for the faster speed at which the hopper is operated to close up the gaps in the stock going through the molder. The second clutch is a throwout type, designed to disengage the kicker wheel drive when desired.



New feedworks. Six rolls are powered by helical gears. Rolls are on extremely short centers for easy handling of short stock. Top rolls are on single slide for straight line vertical adjustment.

Jointing plywood and laminated plastic at Chadwick Manufacturing Company . . .

CARBOLOY® SOLID CARBIDE KNIVES PAY FOR THEMSELVES IN 6 WEEKS

One set of Carboloy carbide knives on the jointer at left has been on the job almost a year without dulling. And Chadwick Manufacturing Co., Coleman, Wisc., estimates they will operate another 6 months before they need their first resharpening. These knives eliminated $10 a week in grinding costs, and paid off Chadwick's initial investment in less than 6 weeks.

Prior to carbides, steel knives cut only 1,000 lineal feet of plywood and laminated plastic surfacing before they began to chip. Equally important, rapid dulling of the knives made it impossible to maintain perfectly matched joints.

With Carboloy carbide knives, Chadwick estimates they will cut 150,000 feet before regrinding . . . get lower costs and perfect joints.

Carboloy carbide knives are available in sizes up to 40" for planers, molders, shapers, and other equipment. For technical information or the names of suppliers of Carboloy carbide knives, write: *Metallurgical Products Department of General Electric Company, 11128 E. 8 Mile Road, Detroit 32, Michigan.*

Carboloy carbide jointer knives eliminated $10 a week in grinding costs . . . paid for themselves in 6 weeks. Estimated production before resharpening is 150,000 lineal ft. compared with 1,000 ft. with steel knives.

Progress Is Our Most Important Product

GENERAL ELECTRIC

Feedworks

Three powered rolls above and three below offer a number of advantages. The first top roll can be operated under reduced pressure to start the stock into the feedworks, after that it is further influenced by the second and third set of rolls. These rolls are placed on short centers to have the greatest effect of feeding short stock.

By providing six powered rolls, contact between the roll and stock is increased by 50%. This permits delicate moldings to be fed through the machine with minimum pressure on the rolls and thus less crushing effect on the stock.

Each roll is actuated by an individual air cylinder. One regulator controls the pressure on the first roll only and a second regulator controls the pressure on the other two rolls.

Spindle Units

On the Model 124, the yoke supporting the spindle unit for the top and bottom head is a heavy rigid casting designed to adjust vertically on a single slide located on the motor side.

A section of the slide is on the left guide side to which the yoke is clamped when adjusted to the desired position.

The position of the cutterhead is clearly indicated by a scale visible to the operator. It has a means for compensating for the range of cutting circles included in the design.

The top and bottom head spindle units are supported by precision bearings. These are spring pre-loaded, with 200 lbs. pressure applied directly against their races, eliminating all end and radial play.

Top Head Chipbreaker

The top head chipbreaker permits easy stock entry. Individual sections are independently spring-loaded and mounted with a single pivot point placed so the yield swings in the same direction as the stock feeds.

After the individual sections have raised ⅜" the entire chipbreaker unit raises concentric to the cutting circle.

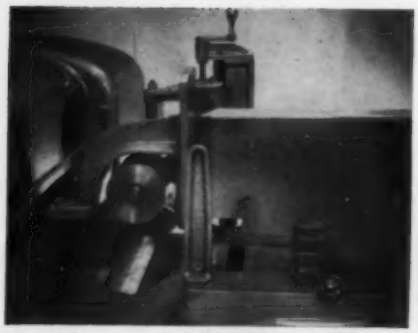
When changing cutterheads, the entire chipbreaker assembly can be swung out of the way. There are no bolts or nuts to loosen. The spring-loaded plunger is connected to the chipbreaker by a slotted extension and is readily disengaged.

A scale and indicator are provided on the front of the housing to indicate proper setting of the chipbreaker for various cutting circles.

Side Heads

Side head spindles are supported by precision ball bearings and are preloaded to eliminate all radial and end play. Vertical adjustment of the spindle unit is 2", providing maximum versatility and setup range.

A quick release feature on the left side head chipbreaker permits the operator to open the machine at this point. This also reduces time required to get the machine back in operation as no further adjustments are necessary.



New hopper feed utilizes ball and roller bearings throughout. Only two adjustments are needed: a single crank for various thicknesses and a handwheel for various widths.

The left-side chipbreaker has a removable hardened steel lip that contacts the stock. This lip is set ⅛" below the bed line to prevent chips from wedging under it.

Dust Hoods

Dust hoods for top head and side heads are cast aluminum. These lightweight castings make it easy for the operator to remove the hoods, and the streamlined shape provides maximum efficiency for air flow and chip removal. Cutterheads are enclosed as much as possible.

Jointers

All jointers are provided with a lead screw to pass the stone holder back and forth across the knives. This permits the stone to pass at a uniform rate rather than in jerky movements.

Variable Speed Drive

A variable speed drive unit assembly is standard on each model. The 7½ h.p. and 10 h.p. drive has a range of speeds within a 7.5:1 ratio.

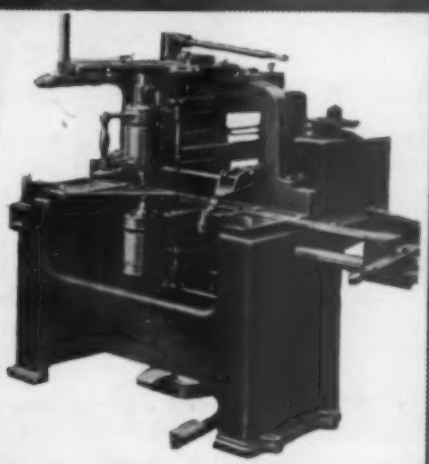
For complete information on these molders write the G. M. Diehl Works, Inc., Wabash, Indiana.

Use postpaid card. Circle No. 18

NOW! Perfectly paired and matched STAIR STRINGERS

Automatically - without pitch boards

TWIN STAIR ROUTER



★ Routs pitch on 2 boards at one time — assures perfect matching

★ Easily adjusted graduated template guides router to exact tread and rise — no marking off

★ Assembling and finishing are easier, faster—stairs are better built

★ One semi-skilled operator can produce as much as three master carpenters.

Write today for complete details.

SUPREME WOODWORKING MACHINERY CORP.

50-52 Howard Street • New York 13, N. Y.

New Speedsander Introduced

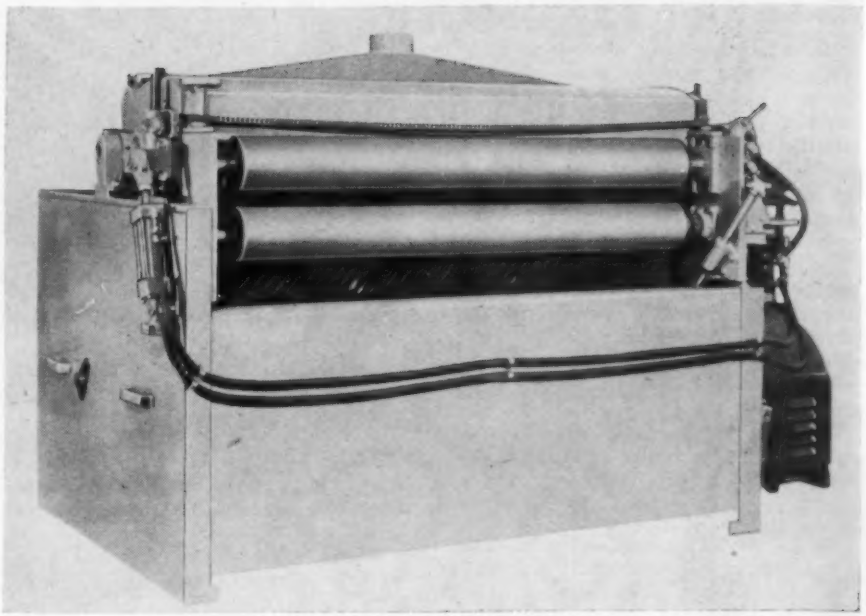
Timesavers, Inc., Minneapolis, Minn., recently announced a new Speedsander, Model SPL, featuring new production advantages for faster, smoother wood sanding or metal finishing. The unit is designed to perform both functions on a wide variety of materials.

Outstanding design advantage is its 34" feeding height—it's built to fit into any production set-up or conveyorized finishing line and to work in tandem with Model T.O.P. Timesaver Speedsanders for sanding or polishing both sides at one pass. This compact unit also has exclusive automatic belt tracking—the simplest, most effective means of tracking wide abrasive belts through the use of swivel tracking rolls.

Feed speeds available: up to 100 f.p.m. —higher speeds if required. Model SPL is available in 24", 40", 50" and 60" widths.

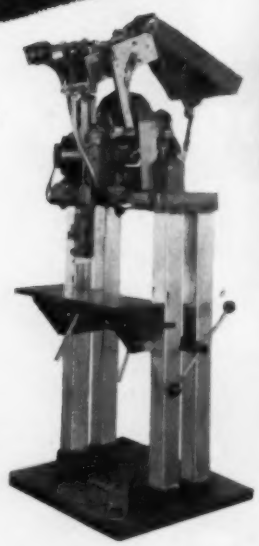
For further information, write to Timesavers, Inc., Box 7446, Robbinsdale Station, Minneapolis 22, Minnesota.

Use postpaid card. Circle No. 19



Unlimited

IN APPLICATION the New "DOIG" SINGLE HEAD NAILING MACHINE



$995.

1. At $995.00 — a multi-purpose single head nailing machine.
2. Handles nails from 1" to 2½" at one hundred strokes a minute.
3. Specifications:
   Table Drop—12"
   Distance between frames—16"
   Overhang—5"

Designed for box shops and shipping departments that drive a lot of nails but do not have any long runs on one particular item.

DOIG

WILLIAM S. DOIG, INC., HAVERSTRAW, NEW YORK

Gulletless Saw Effects Savings

Lemmon and Snoap, customized carbide-tipped saw manufacturers, state that reports from many parts of the country indicate the "gulletless" saw

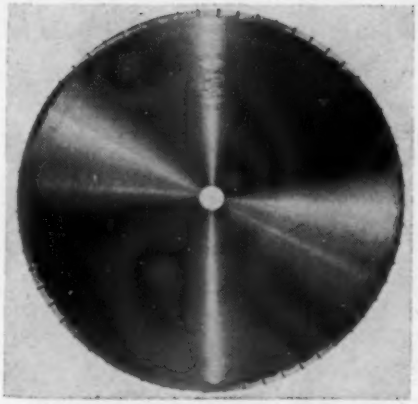
DIMENSION STOCK
rough parts in oak, birch, and poplar

CORES
in poplar and cottonwood

MOULDINGS
poplar, oak, birch, and beech

ANDERSON PRODUCTS CO.

Box 35, Station H
LOUISVILLE, KENTUCKY



which they introduced sometime ago, is one of the most note-worthy developments in sawing plastics, fiber board and nonferrous metals. This saw, known as a "Flying Cutter," since it has no gullets between the teeth, might also be termed a cutting wheel, for carbide teeth are simply inserted and welded into the saw blade in scientifically determined intervals.

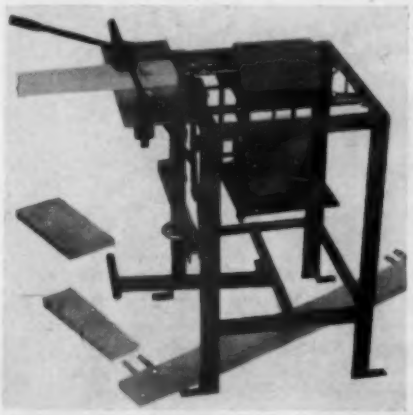
Because of its construction, the manufacturers state, this saw does not grab the material being cut as do the standard carbide saws. It eliminates saw cut flash on extrusions and can be used on those thin extrusions which can not be successfully cut with the conventional carbide tipped saw.

Complete information may be had from Lemmon & Snoap, Grand Rapids 4, Michigan.

Use postpaid card. Circle No. 20

Anderson Horizontal Borer

This boring machine is available from Woodworkers Tool Works, 222 S. Jefferson St., Chicago, Ill. Frame is of angle iron construction. The foot feed moves boring spindles forward. The plate on which heads are mounted is 10" x 16" long.

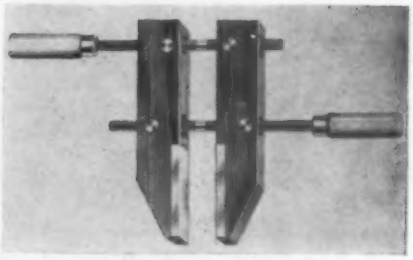


The table measures 8" x 24" with a quick acting clamp. Vertical adjustment of 6"; motor plate is 12" x 14" mounted below boring heads.

Use postpaid card. Circle No. 21

New "Glue-Shield" Handscrew

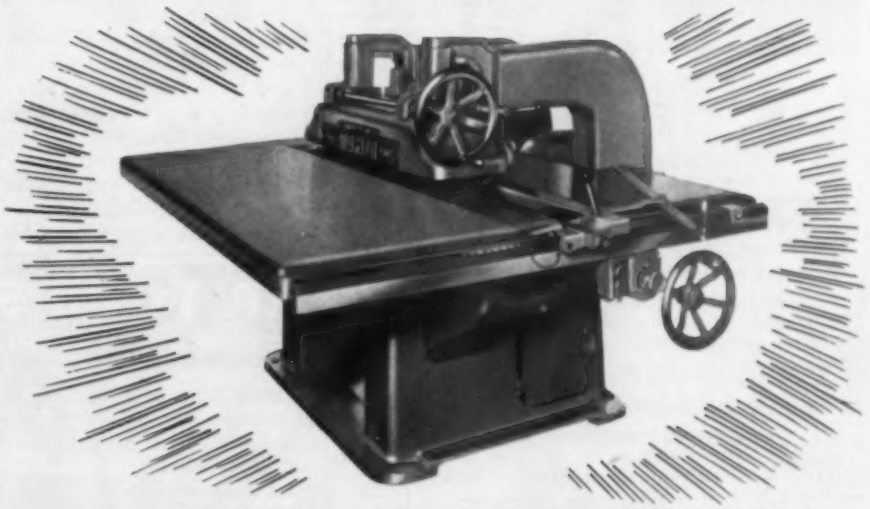
A new series of industrial quality handscrew clamps featuring a soft metal shield on wooden jaws has been announced by the Wetzler Clamp Co. It is manufactured under the name "Glue-Shield" and it is said to be the first major improvement in handscrew clamp design in over 30 years.



The "Glue-Shield" design accomplishes two purposes. The metal shielding simplifies and speeds removal of

EKSTROM, CARLSON MODEL M

UNDERCUTTING, STRAIGHT-LINE GLUE JOINT RIP SAW



A TIME-TESTED, RELIABLE, PRODUCTION MACHINE

Here is one of the greatest of the fine, modern machines available today to producers of wood products. This machine has been successfully used for a number of years by well-known woodworking manufacturers, and thus has proved its outstanding value. It was originally a product of the Marion Machine Foundry and Supply Company. Now it has been added to the Ekstrom-Carlson line, and will be henceforth manufactured and sold under the ECCo name. We consider it a worthy companion to our widely-used Moulders, Routers, Shapers, Sanders, and other production machine tools for the woodworking industry.

Write for Literature Giving Full Details and Specifications.

EKSTROM, CARLSON & CO., DEPT. W-9, 1400 Railroad Ave., Rockford, Illinois

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LINEAL – MOULDER – CUT
COMPLETE MACHINED QUALITY WORK
BOWEN MILLWORK AND FURNITURE CO.
1845 PARR HIGHWAY ADRIAN, MICHIGAN

residual glue from the jaws. In fact, this can now be done in seconds. The inserts protect the jaws from defacement which usually is the result of scraping. Thus the new handscrew has a far longer life than any ordinary type, with jaw surfaces always remaining true. "Glue-Shield" also prevents marring of fine finishes.

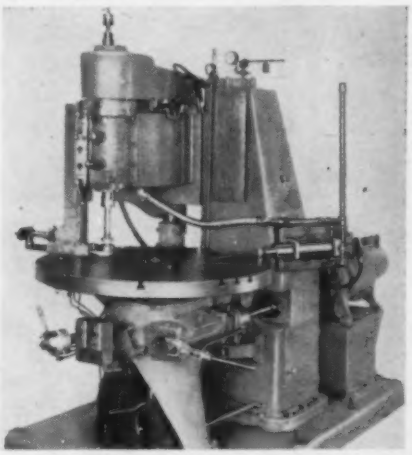
The wooden jaws are made of perfectly grained maple, properly seasoned and oiled, while handles are turned from smooth hardwood. The spindles are 7/16" cold drawn special quality steel. "Glue-Shield" is furnished in jaw lengths of 8, 10 and 12 inches, with 4½, 6 and 8½ inch openings, respectively.

Further details may be obtained direct from Wetzler Clamp Co., Sales Dept., 43-15 11th Street, Long Island City 1, N.Y.

Use postpaid card. Circle No. 22

Onsrud Shaper Combines Vertical and Horizontal Cutter Feed

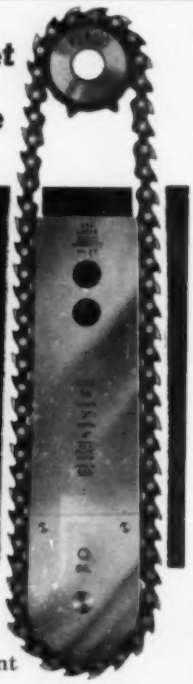
The new Onsrud WA-50-AV automatic shaper being introduced to the woodworking field is a machine that represents a dramatic forward step in automatic shaper design. With this new machine it is now possible to shape compound curves in a single setup. Wood parts such as curved chair backs may now be shaped for example, in one setup and with about the same production speed as a part whose edge lies in single plane. This type of cut is possible since the shaper arm provides conventional movement across the rotary feed table as in all Onsrud automatic shapers with the addition of vertical travel of the spindle during the shaping cut as required by the curve of the part.



Vertical travel of the spindle is actuated by a hydraulic tracer which follows a template, with the template functioning as a cam to determine at any given moment the vertical position of the cutter. This action combined with the conventional pattern control and horizontal travel of the cutter makes possible the shaping of compound curves at high production speeds, with accuracy and smooth finish.

Application of the shaper covers a wide range of parts. It also offers the product designer a new opportunity for including compound curves as a

Your best bet for low maintenance



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The SIMPLEX Band Saw Filing Machine is the simplest one of its kind made, works automatically and requires no attention after being started.
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SUPREME BAND SAWS cut faster . . . have increased cutting capacity with minimum breakage! Present day high speed equipment demands Supreme Saws. Free from kinks and imperfections. Made from the finest Special Nickel Alloy Steels, tempered for toughness . . . to stay sharp! There is a Supreme Band Saw for every industry . . . for every material. Special purpose saws are made to order.

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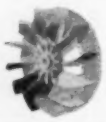
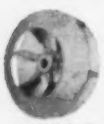
TYPE C HIGH PRESSURE WHEEL


SLOW SPEED LOW POWER WHEEL

RIM TYPE MEDIUM PRESSURE WHEEL

LONG SHAVINGS MATERIAL HANDLING WHEEL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WOOL WHEEL FOR STRINGY MATERIALS

REPLACEMENT WHEELS AVAILABLE—all sizes, all types, dynamically and statically balanced to insure perfect operation.

WRITE OR PHONE—for free stock list.

Phone: INdependence 3-5127

Wm. W. Meyer & Sons, Inc.
8297 NILES CENTER ROAD, SKOKIE, ILL.

design element, where production costs up to now may have been prohibitive. Typical kinds of parts ideal for this new machine include a wide variety of furniture parts, coat hangers, chair backs for school seating and other curved wood parts.

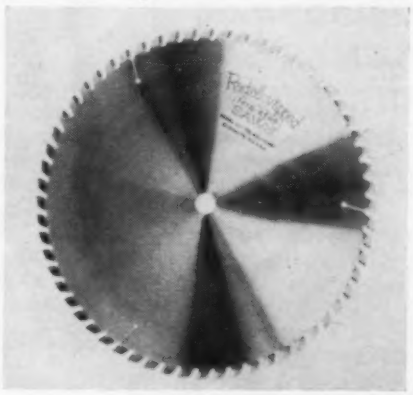
The WA-50-AV has a turning capacity of 50" and is supplied in a choice of spindle speeds to meet customers' specifications.

For complete information, write the Onsrud Machine Works, Inc., Woodworking Machine Division, 3947 Palmer Street, Chicago 47, Illinois.

Use postpaid card. Circle No. 23

Thin-Kerf Saw Blade Eliminates Edge Chipping

Manufactured by Radial Cutter Manufacturing Co., 831 Bond St., Elizabeth, N. J., these new saw blades have been carefully developed to cut smoothly and precisely without edge chipping or cracking, eliminating sanding and other finishing operations. "Thin-Kerf," fine pitch blades were designed specifically for applications in thermosetting and thermoplastic materials, expensive woods, veneered plywoods, and light gage non-ferrous metals.



These new Radial Cutter blades are good for hand feed, precision cutting operations and, under certain conditions, for power feed, single or gang-cutting operations.

Use postpaid card. Circle No. 24

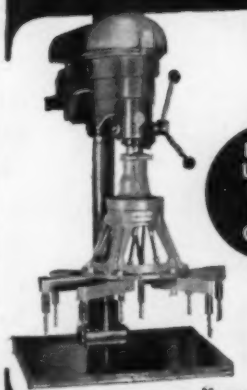
Narrow Aisle Trucks

The Lewis-Shepard line of riding-type electric tiering trucks is now available with a HydraFork attachment to further facilitate use of the trucks in extremely narrow aisles.

To pick up a palletized load from the floor or a storage rack, the operator of the HydraFork-equipped truck simply hydraulically extends the forks into the pallet. Next, the load is lifted over the load wheels, and forks and load are retracted into the truck.

Because of this feature, a HydraFork-equipped narrow-aisle truck can pick-up and deposit loads in aisles only as wide as the length of the truck and its forks. It needs no extra space for maneuvering.

FASTER HOLE PRODUCTION with Commander MULTI-DRILLS



DRILLS UP TO 22½" BOLT CIRCLE

- Drills up to 8 Holes at 1 Stroke
- Fits Any Drill Press
- Adjustable to Any Hole Pattern
- Quickly Pays for Itself Many Times Over

● Commander MULTI-DRILLS are instantly and easily adjusted to handle any hole pattern within a 9" circle. Standard Extension Spindles will increase working area to 22½". Minimum center distances close as ½". Compact in design, ruggedly built, Commander MULTI-DRILLS are making BIG Savings in time and labor for wood-working plants everywhere. Special adaptations available.

Your nearby Commander Distributor has the MULTI-DRILL. Write for his name.
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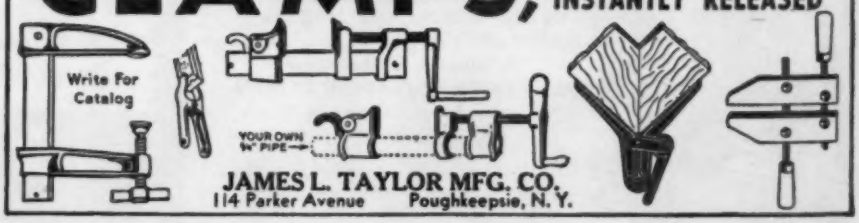
CLAMPS, INSTANTLY ADJUSTED INSTANTLY RELEASED



JAMES L. TAYLOR MFG. CO.
114 Parker Avenue Poughkeepsie, N. Y.

For further information on Lewis-Shepard Model "M" and "MN" electric tiering trucks with the HydraFork attachment, write Lewis-Shepard Products, Inc., Department R-8, 125 Walnut Street, Watertown 72, Mass.

Use postpaid card. Circle No. 25

Mitre Saw Increases Cutting Production

Here is a double cutoff saw that cuts two mitres in one operation for picture frame and furniture manufacturing. This saw is an improvement over the old method of cutting one mitre at a time.

The operator slides the molding against an adjustable stop to the right of the machine and presses a foot pedal that brings down both blades simultaneously, giving two 45° cuts. Upon release of the pedal, both saws rise, thus facilitating removal of the cut piece and making room for the next piece to be slid to the stop. The ¼" waste piece falls into a scrap receptacle under the machine, assuring 75% saving on waste, according to the manufacturer, Mitre Machine Co.

In principle, two Delta cutoff saws are mounted on a special stand designed by Mitre Machine Co. The machine uses twin 13" circular cross cut saws.

Additional information is available from Mitre Machine Co., 48 Fulton St., Brooklyn 1, N. Y.

Use postpaid card. Circle No. 26

NORTHFIELD
Single Chain Saw
MORTISER

FOR MINIMUM OPERATOR FATIGUE

FOR LONGER CUTTING EQUIPMENT LIFE

THIS MACHINE is soundly designed for peak production, long life and minimum expense. The hydraulic feed assures maximum number of mortises per hour with minimum operator fatigue. Other features include; automatic safety stop, automatic clamps; and automatic oiling of chain saw and guide bar.

The NORTHFIELD Guarantee

We guarantee perfect satisfaction to anyone who may purchase our machines, and if any reasonable exceptions are taken to their good performance, they may be returned at our expense.

HIGH SPEED, PRECISION

- Band Saws
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- Wood Shapers
- Jointers
- Saw Tables
- Mortisers (Chain & Hollow Chisel)
- Universal Woodworkers

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NORTHFIELD, MINNESOTA, U. S. A.

THE PARKS No. 20
20" Thickness PLANER

A modernly designed, low-priced, high-speed 20" x 6" planer that meets the surfacing needs of every type of woodworking shop. Ruggedly built for vibrationless operation—assuring quality work, increased production and low operating costs. Provides two feed speeds—20 and 40 F.P.M. or 40 and 80 F.P.M. Four-knife cutterhead has speed of 3600 R.P.M. Available with knife-grinding attachment at additional cost.

COMPLETE DESCRIPTIVE LITERATURE ON REQUEST.

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THE PARKS 12" Thickness PLANER

A compact, sturdy machine that offers mill planer precision and ruggedness at a sensationally low price. A real heavy-duty 12" x 4" planer that can pay for itself. Write for descriptive catalog sheet.

The PARKS WOODWORKING MACHINE COMPANY

Manufacturers of Quality Woodworking Machines Since 1887

DEPT. 20, 1546 KNOWLTON STREET, CINCINNATI 23, OHIO

Industry Notes

Trouble Shooting in the Wood Furniture Industry

The sixth annual course, "Trouble Shooting in the Wood-Furniture Industry," will be held at the University of Michigan, Ann Arbor, Aug. 5-10. Offered by the Department of Wood Technology and the Summer Session and Extension Service, the course is designed to help the industry save money by minimizing costly rejects or reworking of parts.

The course emphasizes analyses of actual production and service rejects to determine the cause of problems and preventive measures that could have been taken. Through lecture, demonstration, and laboratory practice, wood structure and properties, drying, gluing, machining, and finishing as they relate to mis-manufactured and unserviceable parts, are covered. Sessions are informal with adequate time devoted to exchange of information and discussion of problems of immediate concern to class members, and persons attending are urged to bring with them samples of bother-some rejects for class analysis. Time is available for individual consultation with staff members on specific problems.

The total enrollment is limited to 18 persons with applications accepted in the order received. Advanced registration is necessary and may be made with the Institutes Department, Extension Service, University of Michigan, Ann Arbor. The fee is $125.00 per person and should accompany the application.

WOOD SCREWS

by

NATIONAL LOCK

✓START FAST
✓DRIVE FAST
✓HOLD FAST

Perfect for POWER DRIVING

Cut costs and assembly time with NATIONAL LOCK Wood Screws . . . manufactured to the highest standards of quality and uniformity. Standard flat, round and oval heads, brass or steel, available from stock in all popular finishes . . . special heads and decorative finishes promptly made to order. Write us for new, illustrated catalog or engineering assistance on your specific fastener problem.

SLOTTED HEAD

PHILLIPS RECESSED HEAD

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NATIONAL LOCK COMPANY
FASTENER DIVISION • ROCKFORD, ILLINOIS

Invitations Issued For Finger Jointing Demonstration

Greenlee Bros. & Co., Rockford, Illinois have announced that the firm will conduct working demonstrations of their new finger-jointing equipment at their plant during July and August.

Visitors will see how this latest equipment precision-machines, glues, assembles and electronically cures the joints in one continuous operation. They'll see the assembled stock automatically cut to predetermined lengths after being joined.

Greenlee sales and engineering personnel will conduct clinic sessions in conjunction with the demonstrations. They will explain in detail how Greenlee finger-jointing equipment can be used to upgrade dimensional lumber and utilize short lengths that are now wasted. Representatives of companies supplying the adhesives and electronic curing equipment used in the process will be present.

Greenlee officials have extended an invitation to anyone interested in finger-jointing to attend these demonstrations for one or two days. Arrangements can be made by writing or phoning D. B. Perkins of the woodworking sales department.

Solem and Merritt-Solem Activities to be Concentrated in Rockford

According to an announcement by Mr. Peter Solem, president and general manager of Solem Machine Company, manufacturing activities of this firm and those of the Lockport, New York branch, known as the Merritt-Solem Division, will be concentrated in a new factory building containing 50,000 square feet of floor space, at Rockford.

The new factory will be located on a 16-acre site in the Love's Park area. The full line of endless-bed and double-deck sanders made by Solem, plus the extensive line of veneer manufacturing machines formerly made in Lockport, will be produced. Light planers made by Solem will be manufactured in the same plant.

The factory building to be erected will be novel, being the first industrial structure in the nation to employ a plywood exterior on structural steel, thus demonstrating advances which have been made in perfecting waterproof plywoods as a building material. If there are no unexpected complications, Solem manufacturing operations will be under way in the new plant by the end of the year; it is expected that at least 100 persons will be employed.

Carbide Seminar For Furniture Makers

Approximately 90 members of the Western Michigan Furniture Manufacturers group, representing 45 different furniture producers attended an all-cemented carbide woodworking tool seminar in Grand Rapids, Mich. in May. The meeting, which was held at Hekman Furniture Co., covered both technical aspects of carbide tooling, ranging from properties to applications and actual demonstrations.

Speakers at the sessions included: T. C. Weill, Metallurgical Products Department, General Electric Co., Detroit, who talked on Carboloy cemented carbide properties pertaining to the woodworking field, and on costs; W. Creighton, Baker Furniture Co., Holland, Mich., who covered carbide tooling on the rough mill line; W. Van Harn, Miller Furniture Co., Zeeland, Mich., covering finish surfacing chipboard and glued core stock with carbide knives; L. A. Painter, Lemmon & Snoap Saw Co., Grand Rapids, Mich., who talked about carbide knives as applied on stave planers, jointers and molders; J. C. Petter, Buss Machine Works, Holland, Mich., who covered the application of carbide knives to woodworking planers, and Len Snoap, Lemmon & Snoap Saw Co., who spoke about new carbide cutters and wearparts for woodworking and related fields.

Huge Limba Log Arrives at Stem Company

This huge limba log was brought from the Congo region of Africa to the New Albany, Ind., plant of Chester B. Stem, Inc. The log measured 24" in

diameter at the small end and was 39' long. Veneer from limba is light, creamy colored.

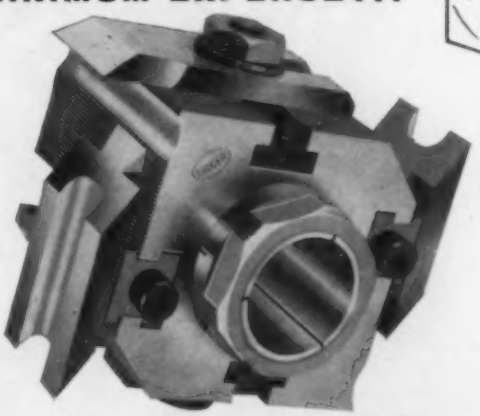
Chester B. Stem regularly carries limba lumber and veneer. Black walnut veneer logs of exceptional size can be seen at the left side of the picture.

Garrison Machinery Co. Opens New Plant

The Garrison Machinery Company, Statesville, N. C., recently moved into a new plant. Open house was held June 11-12, 1957.

In addition to a new machinery inventory of a quarter of a million dollars, the company plans to soon have rebuilding facilities. The company represents 15 large woodworking machinery manufacturers on an exclusive basis in North and South Carolina, Virginia and eastern Tennessee.

FOR SAMPLE RUNS
WITH MINIMUM EXPENSE...



SET UP WITH A BADGER MULTI-PURPOSE HEAD!

Have you ever wanted to modify the cut of a standard milled bit to make a sample run without spending a lot of money? Are you losing valuable production time because of special runs, sample runs or short runs of standard patterns?

If so, a "Badger" Combination Square and Clamp "T" Slot Head can save you time and money. Quick set-ups on the moulder can be made with either slotted knives or milled-to-pattern bits or a combination of both. This flexible, double-duty head will help you out of "tight spots" in your production schedule. Sturdy bolts and rugged clamps assure maximum holding power for cutters, yet can be easily and quickly adjusted or removed. Self centering sleeve is reversible so head can be used on either top or bottom spindle. Corrugations cause MTP Bits to line up true every time. Adjustable clamps will handle dovetails of various widths for different MTP Bits. A head that will pay for itself many times over!

Standard sizes of HSS Slotted Knives and MTP Bits for standard patterns always in stock for immediate shipment from "Badger." With combinations of standard MTP Bits and hand ground slotted knives, you can make modifications, specials, samples — quickly and at least cost. Personal attention to **your** particular problem is an intangible extra you receive every time you order from "Badger."

Engineers to the Woodworking Industry

SEND FOR *Free* SQUARE HEAD BULLETIN #400

NAME.....
FIRM.....
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WISCONSIN KNIFE WORKS
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N.L.M.A. Meeting Plans New Projects

Directors of the National Lumber Manufacturers Association, at their 1957 spring meeting, held at Boston, set the stage for possible expansion of the lumber industry's research, merchandising and wood school promotion efforts. All three projects were the subject of lengthy discussions. The board then directed the association's executive committee to take up specific proposals at a meeting late this summer.

A highlight of the three-day meeting was a panel discussion of the factors responsible for the growing popularity of one-story wood schools. Participants were: Alonzo J. Harriman, architect-engineer; John B. Veach, lumberman; W. Jeter Eason, architect-lumberman.

Here are some of the points brought out in this discussion:

More research on the dimensional stabilization of wood products is needed. As are greater off-site pre-assembly of building parts; more emphasis on design and fabrication in modular units; improvement of wood's fire resistant properties; and development of shapes and structural sections using wood to best advantage.

N.L.M.A.'s new executive vice-president, Mortimer B. Doyle, and Mrs. Doyle were introduced to the association's directors and committee members.

A. L. Helmer of the Polson Lumber Co., Polson, Mont., was elected a director of the association and a member of the executive committee, representing the Western Pine Association. Elected alternate directors were Joseph L. Noyes of the Marshall Lumber Co., Marion, N.C., and A. T. Hildman of the Michigan-California Lumber Co., Camino, Calif.

New regional vice-presidents of N.L.M.A. are A. B. Hood, president of the Western Pine Association; Q. T. Hardtner, Jr., president of the Southern Pine Association and E. R. Thomas, president of Southern Hardwood Producers, Inc.

Creation of Materials Aim of New Research Center

The creation of new materials and new combinations of materials for tomorrow's buildings was the mission given a newly-opened research center at Brewster, N.Y. by the head of the world's largest plywood organization. S. W. Antoville, president of United States Plywood Corporation, officially designated the new facilities as the Lawrence Ottinger Research Center in honor of the corporation's late founder.

Located on a 22-acre tract in the foothills of the Berkshires, completely separated from any of the company's 36 manufacturing plants, the center provides ideal surroundings and equipment for the staff of research scientists.

In launching the project, Mr. Antoville predicted that from the center would flow a succession of products featured by lower initial costs, increased utility and decorative values, and lower maintenance costs.

"This research center," Mr. Antoville said, "has as its assignment the creation of practical products employing present-day materials as well as

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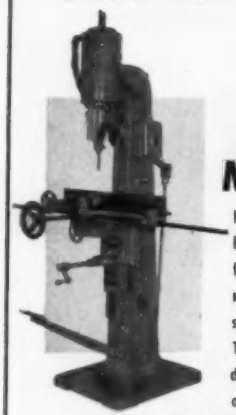
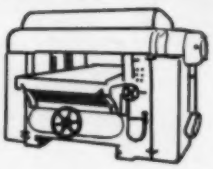


MORTISER

Heavy, well-balanced hollow chisel model for vertical mortising up to ¾ in.-square chisel bit. Table tilts up to 45-degrees, with vertical adjustment of 10 in., cross adjustment of 4 in., foot treadle controls vertical spindle movement, adjustable to depth of mortise up to 3½ in.; 2 hp. motor.



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COLUMBIANA, OHIO

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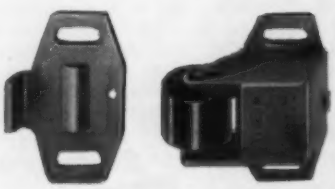
RUBBER ROLLER CATCH

FOR SWING CABINET DOORS

Steel nickel-plated. Heavy rubber, smooth-working roller.

$56.00 per thousand **$6.20 per 100**



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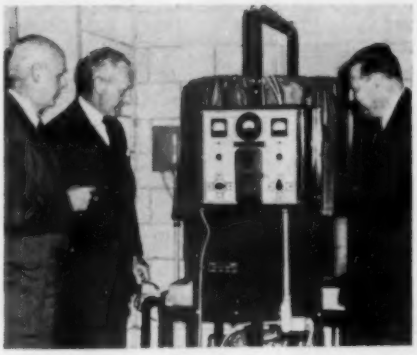


Directors of United States Plywood Corporation inspect the WeatherOmeter testing equipment at the new research center. Left to right: John M. Meyer, Jr., senior vice-president of J. P. Morgan & Co., Inc.; Richard G. Croft of J. H. Whitney & Co.; and S. W. Antoville, company president.

new and improved combinations of materials which may be developed in the future."

"Primarily, the Ottinger Research Center will seek new laminations or combinations of wood, plastics, metals, resins, paper, textiles and other materials suitable for construction, for decorative or functional purposes. Its objective will be to create, test and prove the physical qualities and economic usefulness of new products for homes, industry, office and business structures, furniture, and for fabrication into a variety of other end-products."

Woodworking Machinery Manufacturers' Association Elects Officers

The 57th annual meeting of the Woodworking Machinery Manufacturers' Association was held April 24-26 at the Mid Pines Club, Southern Pines, North Carolina.

Officers for the coming year are Ray C. DuBrucq, Rockwell Mfg. Co., who was re-elected president; Leslie H. Geddes, Greenlee Bros. & Co., vice-president; E. J. Bell, Jr., the Bell Machine Co., secretary; and F. G. Walker, Jones Superior Machine Co., who was re-elected treasurer.

Five members of the Southern Furniture Manufacturers' Association presented a panel discussion on "What We Expect from the Woodworking Machinery Industry." Participating were C. E. Beach, Broyhill Furniture Factories; Phonse Bean, White Furniture Company; E. P. Bounous, Drexel Furniture Co.; R. G. Lennox, Williams Furniture Company, and Charles Prevost, Thomasville Chair Company. J. T. Ryan, executive vice-president of the Southern Furniture Manufacturers' Association acted as moderator.

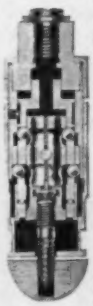
The discussion covered the fields of safety, fast setup equipment, automatic feeding and unloading mechanisms and machinery manufacturers' service. Panel members also described specific new machines which are needed to reduce costs and increase production in their industry.

Appointments and Promotions

Thomas Gerald Delaney has been appointed to the staff of the Wood Office Furniture Institute to serve as an assistant in the institute's research and technology program.

The L. S. Starrett Company, Athol,

TITAN High Speed HANGER BOLT DRIVER



• **TIMED IN SECONDS!**

This tool is used by a majority of plants where hanger bolt driving is done on a high production basis. Can be operated at any speed which is safe for driving the hanger bolt. It is not necessary to stop rotation at any time.

COLLAPSIBLE TYPE TRIP GAGE

Patented. Has such a large adjustment range, made possible by a new all-thread main ring, that most common stud protection heights can be secured with only one gage.

- AUTOMATIC TAKE-UP FOR WEAR ON JAWS
- REVERSING POSITION OF CLUTCH GIVES DOUBLE WEAR AT HALF COST
- AFFORDS ACCURATE PROJECTION HEIGHTS
- USE WITH ANY AIR OR ELECTRIC DRILL OR DRILL PRESS

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Production Tools
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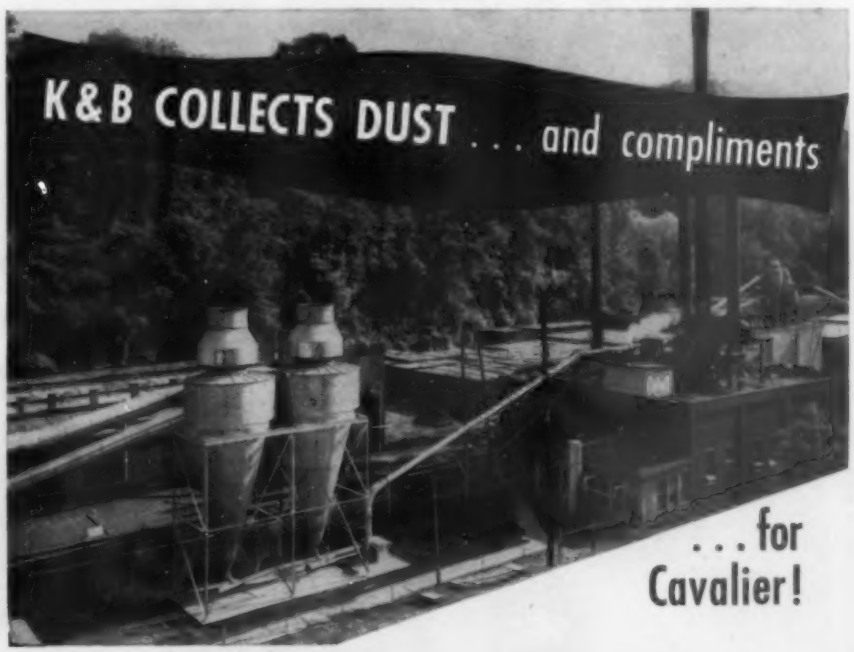


Kirk & Blum Design 3 Collectors

The Cavalier Corporation, Chattanooga, Tenn., quality furniture manufacturers, realize that clean air pleases people both inside and *outside* the plant.

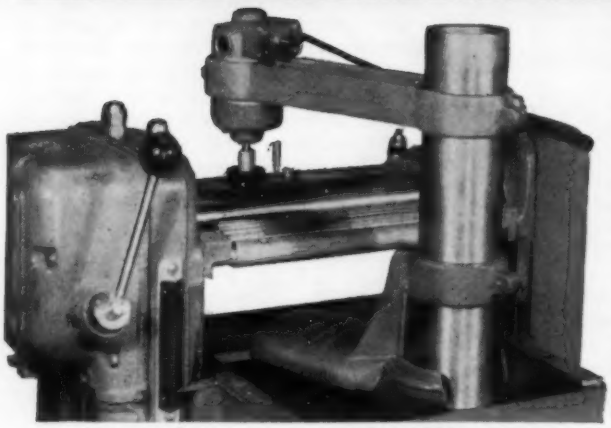
To make a clean sweep of their dust collecting problems, they called in K & B. The result . . . a streamlined, efficient installation . . . and compliments on cleanliness from neighbors nearby.

Put "Clean Air, The Invisible Tool" to work for you. Contact Kirk & Blum today for a completely integrated dust control system, from design thru fabrication and installation.

The KIRK & BLUM Manufacturing Co.
3121 Forrer Street **Cincinnati 9, Ohio**

KIRK & BLUM DUST CONTROL SYSTEMS

Foster Portable JOINTER PLANER BLADE SHARPENER



A SAVING of 2 to 3 hours is assured whenever you use the FOSTER PORTABLE JOINTER or PLANER-BLADE SHARPENER. No removing of blades or costly, time consuming readjustment. All blades are ground parallel to table top in a few minutes and machine is back in production with all blades cutting uniformly.

Foster Sharpeners are available from dealers listed below.

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CANADA
Preston Sales & Service,
Preston, Ontario

FOSTER SUPPLIES COMPANY
6122 Milwaukee Avenue, Dept. WD, Chicago 30, Ill.

Mass., has appointed four additional salesmen: **Richard H. Chace,** San Francisco; **Charles B. Whipps,** Toronto, Ont.; **Allan B. Carruth,** Atlanta, Ga.; **Robert J. Carney,** Los Angeles, Calif.

Richard W. Fish, formerly assistant to the woodworking product manager of Rockwell Manufacturing Company's Delta Power Tool Div., has been appointed eastern Michigan district sales manager.

Roger A. Davis has been named a sales representative for Stanley Electric Tools. He will represent the company in Rhode Island and western Massachusetts.

Atkins Saw Division, Borg-Warner Corp., has announced two appointments. **A. W. Roark** has been named the western division manager with headquarters in Portland, Ore. **Kenneth L. Stockum** has been named a factory representative in western Pennsylvania, eastern Ohio, West Virginia and part of Maryland.

Jed Davison, formerly sales manager of Morgan Manufacturing Co., has been elected vice-president in charge of sales.

Forest Fiber Products Co., Forest Grove, Ore., has appointed **Henry B. Jacobsen** as sales manager.

Boice-Crane Co., Toledo, Ohio, announces that **Williams & Jensen International, Inc.,** South Haven, Mich., will be its export representative.

DRILLING COSTS TOO HIGH?

In Steel . . . Stainless . . . Brass . . .
Aluminum . . . Titanium . . . and Wood

HI-STANDARD Deep-Hole Drills give you . . . at lower cost . . .

- Exacting Hole Diameters
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- Improved Hole Surface Finish
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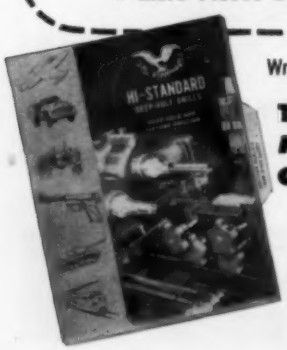

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Pioneers and Makers of Deep-Hole Drills For More Than 30 Years

Cutters with a Purpose

Every cutterhead and knife that leaves our plant is designed, manufactured and guaranteed to do a particular work in the most economical and efficient manner.

Write us.

GRAYCON TOOLS, INC.
WABASH, INDIANA

TANNEWITZ AUTOMATIC GAUGE
for Swing Saws
SAVES $30 to $50 A MONTH IN LUMBER AND LABOR
30 Days Free Trial
ORDER NOW OR SEND FOR CIRCULAR
TANNEWITZ WORKS
GRAND RAPIDS MICHIGAN
DEPT. 4

Frank E. Metz, president of Coast Wood Products, Inc., Seattle, Wash., has been elected president of the Northwest Furniture Manufacturers' Association.

Firth Sterling announces two appointments. **Harry Davidson** is now Canadian district manager for the firm. **Thomas F. Nakles** has been appointed general manager of Firth Sterling (Canada) Ltd., Brantford, Ont. Earlier this spring, Firth Sterling announced the formation of Firth Sterling (Canada) Ltd.

Louis J. Jaworski has been appointed manager of government services by the Borden Company's Chemical Division. In his new position he will represent the division on government contracts and will deal with armed forces offices throughout the country.

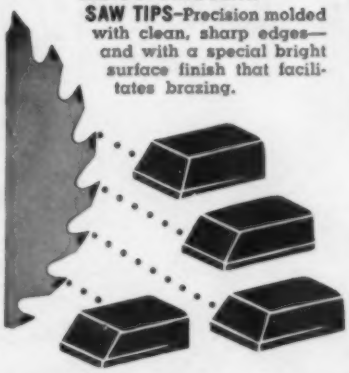
Wayne Gustafson has been appointed sales supervisor by Armour and Company, Coated Abrasives Div., Alliance, Ohio. He will supervise sales in Illinois, Wisconsin and Iowa.

Coming Next Month . . .

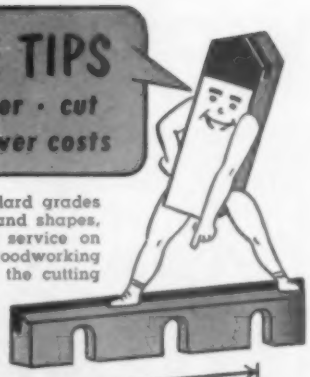
A complete report of the F.P.R.S. meeting held at Buffalo, N.Y., in late June.

Also a report on the Chicago furniture market.

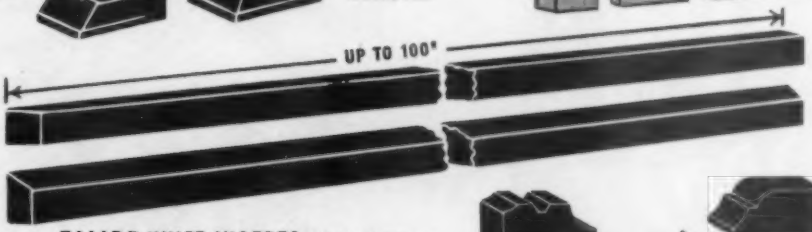
TALIDE CIRCULAR SAW TIPS—Precision molded with clean, sharp edges—and with a special bright surface finish that facilitates brazing.



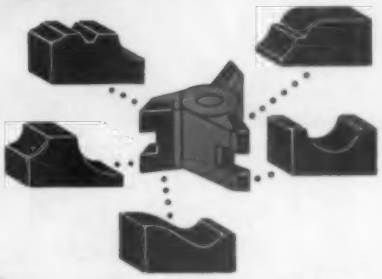
TALIDE TIPS stay sharper · cut longer · lower costs



Available in 5 standard grades and in many sizes and shapes, for high production service on every type of woodworking operation, including the cutting of insulation board, hard board, fibres, plastics, laminated wood, etc.



TALIDE KNIFE INSERTS—Made in one solid piece (without seams or sections) and in any length up to 100"—a Talide insert assures top performance on all planer knife applications.



Metal Carbides Corporation, 6001 Southern Blvd., Youngstown 12, Ohio

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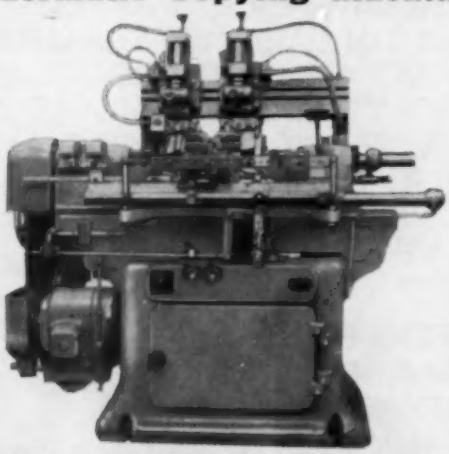
METAL CARBIDES CORPORATION
MC
TALIDE®
YOUNGSTOWN 12, OHIO
HOT PRESSED AND SINTERED CARBIDES • VACUUM METALS
HEAVY METAL • CERMETS • HIGH TEMPERATURE ALLOYS
OVER 25 YEARS' EXPERIENCE IN TUNGSTEN CARBIDE METALLURGY

TALIDE ROTARY CUTTER BLANKS
Preformed to accurate tolerance with minimum stock—and to any form or shape desired.

the NEW HH5 Automatic Copying Machine



. . . completely automatically feeds stock, performs all operations, and ejects up to 1000 pieces/hour.

The NEW HH5 turns up to 3" dia. and 20" length. Merely place the square, round, bored or unbored wood in the hopper after it has been cut to length. From there, the HH5 automatically takes each piece and ejects it . . . finished . . . an exact copy of the template.

Large output, varying with length and dia., and proper work are assured. Revolutions are adaptable to the article and the speed of advance can be regulated with infinite variety from 0 to 40 feet/min.

GET ALL THE DETAILS ABOUT THE NEW HH5

HENRY WIEGAND CORP.

Woodworking Machinery—Sawmill Machinery

122 Bretton Road, Box 36, Centuck Post Office, Yonkers, New York

INCREASE FEED RATES ON THE SAW, SANDER, JOINTER

ON THE JOINTER . . .

The King E-Z Safety Feed automatically feeds stock at 40 feet per minute. Saves fingers and lost time by accidents.

Steps up production many times faster than hand feeding, improves quality because of regularity of feed, smoother finish, fewer knife marks. Can be easily moved from one machine to another. Speeds from 20 to 90 feet per minute.

TWO MODELS TO MEET EVERY NEED

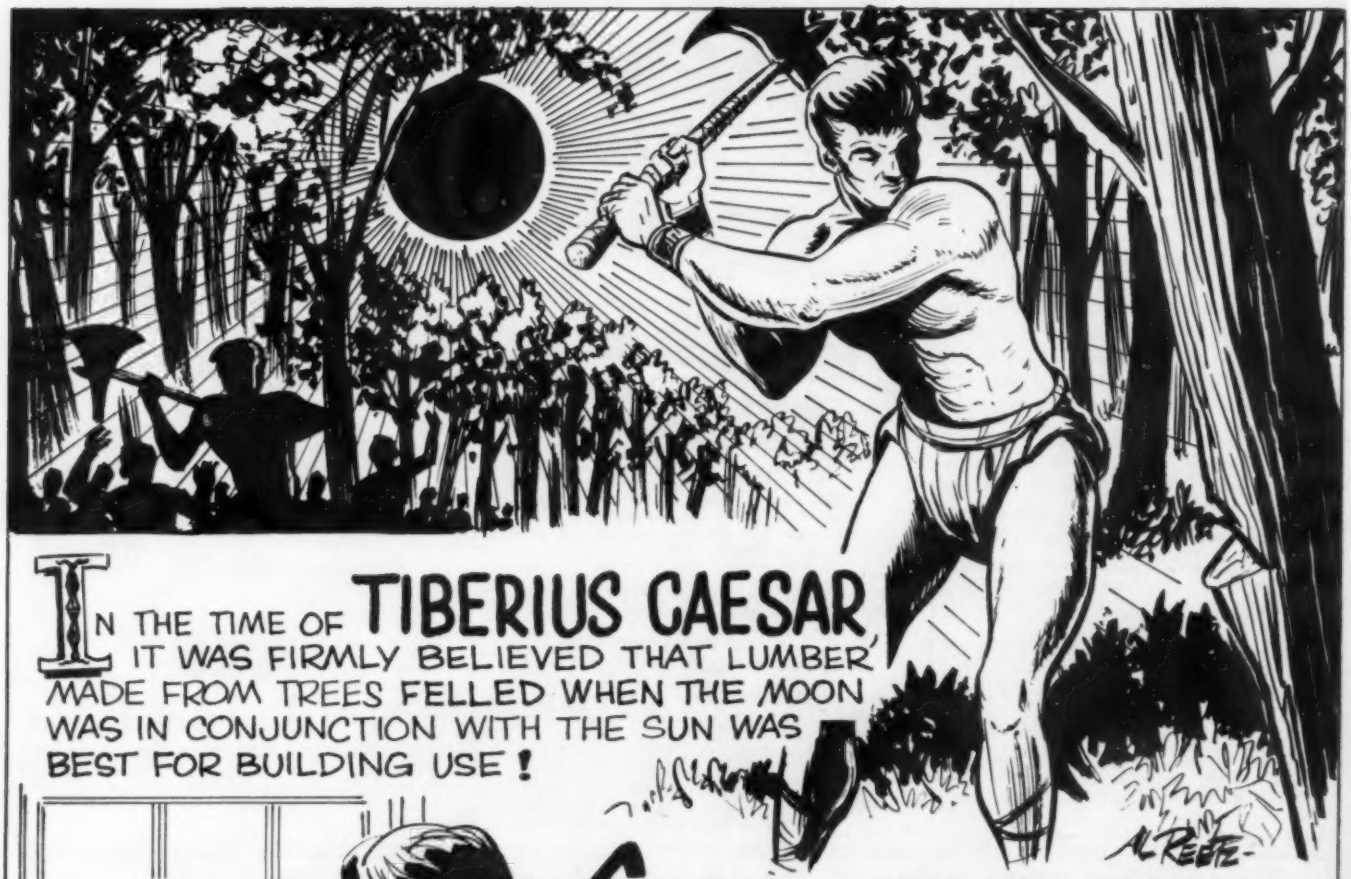
Model W-2 for normal feeds on saws, sanders, shapers, and jointers. Model W-4 for heavy duty work requiring more traction for feeding.

Write For E-Z Safety Feed Catalog

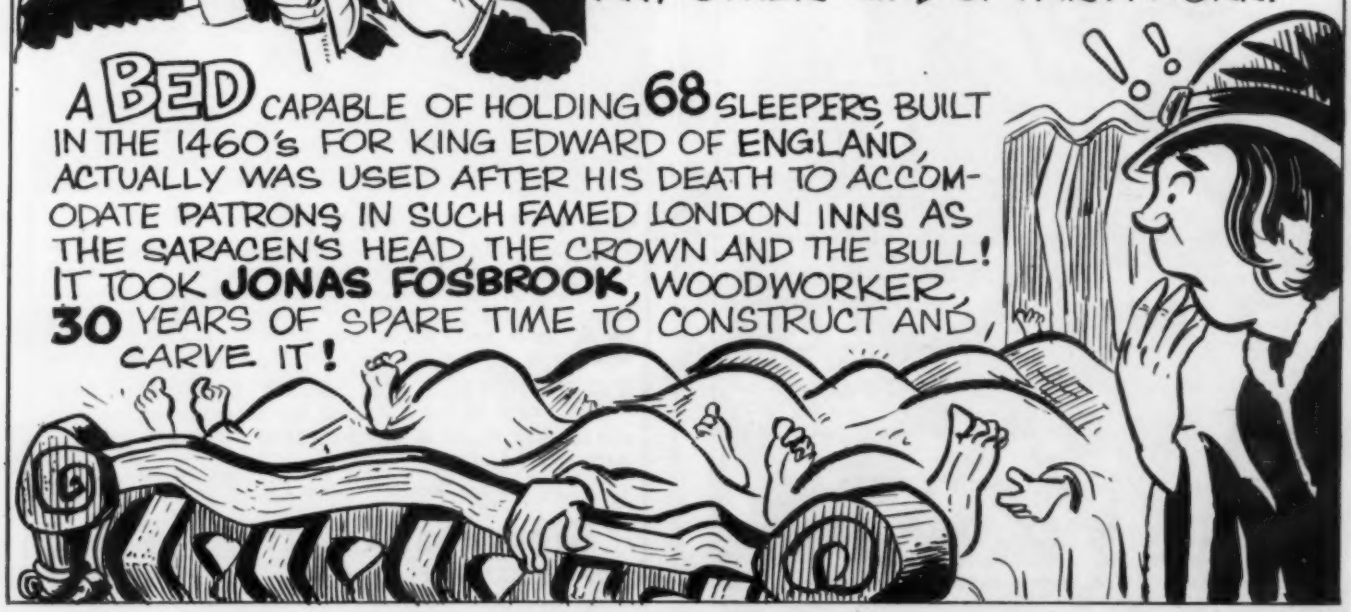
King Manufacturing Co.

P.O. Box 787 Phone 5504 Corinth, Mississippi

WOOD THROUGH THE AGES


IN THE TIME OF TIBERIUS CAESAR, IT WAS FIRMLY BELIEVED THAT LUMBER MADE FROM TREES FELLED WHEN THE MOON WAS IN CONJUNCTION WITH THE SUN WAS BEST FOR BUILDING USE!
AL REBETZ

SO URGENTLY NEEDED WERE CARPENTERS, TURNERS, SAWYERS," NAYLERS" AND "JOYNERS" IN EARLY 17th CENTURY VIRGINIA THAT ANY SUCH CRAFTSMEN WHO CAME TO THAT COLONY WAS OBLIGED TO WORK AT HIS TRADE AND FORBIDDEN TO PLANT TOBACCO OR DO ANY OTHER KIND OF FARM WORK.


A BED CAPABLE OF HOLDING 68 SLEEPERS, BUILT IN THE 1460's FOR KING EDWARD OF ENGLAND, ACTUALLY WAS USED AFTER HIS DEATH TO ACCOMODATE PATRONS IN SUCH FAMED LONDON INNS AS THE SARACEN'S HEAD, THE CROWN AND THE BULL! IT TOOK JONAS FOSBROOK, WOODWORKER, 30 YEARS OF SPARE TIME TO CONSTRUCT AND, CARVE IT!

if it has all these features it's a MOAK Hand Planer and Jointer

You don't buy a Hand Planer and Jointer every day. When you do, buy the best. For complete detailed information on Moak 12'' and 16'' Jointers, write for our illustrated bulletin.

PERFECTLY GROUND CYLINDER HEAD

Forged from high carbon alloy steel and perfectly ground all over, the Moak cylinder head is virtually vibrationless, makes little noise, is simple to adjust, does absolutely smooth planing.

ADJUSTABLE BEVEL FENCE

is adjustable to any angle up to 45° and across the table so material can be planed up to the full capacity of the machine without having to be removed. It can be locked securely at desired angle.

CONVENIENT HAND BRAKE

A slight pressure on the hand brake stops the cylinder, providing maximum safety for the operator and other workmen.

OPERATOR GUARD GIVES POSITIVE PROTECTION

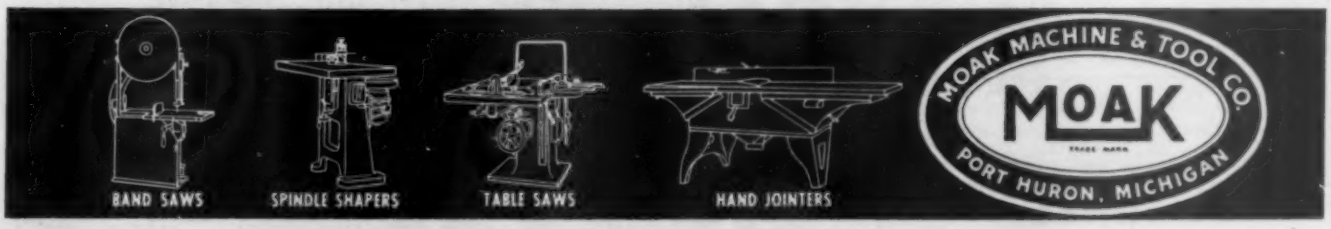
A tension-spring aluminum guard presses against the wood being machined. The rear guard moves with the fence, permitting no part of the cylinder head to be exposed to the operator.

THREE-LEGGED CONSTRUCTION GIVES STABILITY AND FOOT SPACE

Possible settling of the floor, or bolting to an uneven floor, cannot twist or strain the machine. The operator has plenty of foot space close to his work.

HAS MANY VALUABLE USES

An ideal machine not only for jointing and planing out of wind, but also for rabbeting, grooving, chamfering, beading, gaining, beveling and squaring up.



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P.O. Box 230 **Asheville, N.C.**

Air Compressor: Ingersoll-Rand No. ER 6x8, Complete
Air Compressors, various sizes
Band Saw: Amer. Saw Mill 20" BB, DMD.
Bandsaws, Crescent 32" PB V-belt Drive and Motor
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Borer, J. Superior 2 spindle horizontal M.D.
Borers, Root Single Spindle Direct Motor Drive
Borers: McKnight 88C, Chucking, DMD.
Borers: Greenlee 5 spindle horizontal M.D.
Borers: Greenlee No. 386—6 Ft. 8 spindle, DMD.
Borers: Greenlee 386C—6 Ft. DMD. 8 Spdle.
Carvers, Porter b.b. dmd.
Clamps: Lancaster No. 100C Case
Clamps, McKnight Chair
Clamps, Billstrom 20 sec., 6 clamps sec.
Clipper, Coe 88" bed and motor
Clippers: Diamond 36", M.D.
Dovetailers, Dodds 20 spindle
Dowel Machine, Bell bd. & motor
Glue Jointer, Yates No. 213 & Jenkins 343A, bb, dmd.
Glue Spreaders: 12" Black Bros. dmd.
Glue Spreaders: Francis 42" Dbl. Roll, Rub. Cover MD.
Glue Spreaders, Francis, 60" Double Roll, Rubber Covered, M.D.
Jointers, New Moak 12" bb, dmd.
Jointers: 12"—8" & 16" bb, v-drive
Jointers, Porter 24" bb, dmd.
Lathes: Mattison 57D, Ballbearing, DMD.
Mortisers: W&M No. 288, 6 spdl. horiz. dmd.
Mortiser, New Britain No. 7 bd. & motor
Moulders, Y-A C89—6" Electric BB, DMD.
Moulders, Hermance 12" BB, BD & Motor
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Planers: Whitney 30"—40" Single, BB, DMD.
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Planers, F&E—30" double, pb. bd. & motors
Planers, Berlin 36" round head dmd.
Planers: Buss No. 4—30"-36" and 48" single, bb, dmd.
Facing Planers: 30" & 36" bb, dmd.
Planer-Matcher, Yates A1-15"x6" round heads, pb. bd.
Redrier, Merritt 12 plate 36x72
Routers, Onsrud W-240 B.B. DMD.
Routers, Y-Amer. U9, BB, DMD.
Sanders: Loeffler 24" Sgl. Drum, bb, v-drive
Sanders: Mattison No. 172 Edge belt, dmd.
Sander, Mattison No. 124 stroke
Sanders, Niagara brush, bb, dmd.
Sanders: Sheboygan 49"—3 Drum End. Bed DMD.
Sander, 48" double disc, dmd.
Sanders, F&E 60" 3-drum roll feed, dmd.
Sanders, Oakley Edge Belt, MD.
Sanders: Smith 43"—3 Drum, End. Bed DMD.
Sander, W&M No. 171 belt bb, m.d.
Saws: Amer. No. 1, gang rip, bb, dmd.
Saws: Bell No. 12 Double Cut-off BB, DMD.
Saws: Mattison No. 207, bb, dmd.
Saws: Eaglesfield Swing cutoff, bb, dmd.
Saws: Eaglesfield str. line rip bb, dmd.
Saws: New Delta-Crescent 12" tilting arbor dmd.
Saws: New Multiplex
Saws: Oliver No. 88D T.A. BB, DMD.
Saws: W-C 8 Ft. Panel, BB, DMD.
Shapers, Onsrud, Auto. BB, DMD.
Shapers: Porter No. 103C Sgl. bb, dmd.
Shapers: Whitney Auto. dbl.
Shaper: Whitney No. 389, double bb, dmd.
Shapers: New Moak single spindle bb, dmd.
Shapers: Greenlee No. 180 double bb, dmd.
Shaper: Whitney double spindle bb, dmd.
Sticker, American No. 1, 1 side 4" pb. bed
Taping Machines, Dennis No. 2
Tenon Heads, single and double end
Tenoners: Amer. Single End, W/Copes, W/Motor
Tenoner, Hayes 6 ft. double with copes, pb. & motor
Frequency Changers, 33 KW, D.M.D.
Motors, Electric, all sizes

Many other items, send your inquiries

FOR SALE

Woodward Machinery Company

309 E. Second St. Cincinnati 2, Ohio

Band Saw; Smith 36 in $125
Band saw; American DMD $200 36 inch
Cutoff saw, American G-44 Swing saw DMD BB, $300
Jointer; B.&M. 20 in rd head $150
Jointer, cutoff and ripsaw 3 mchs. $150
Lathe; Oliver wood, DMD $110
Mortiser, Beach HC $135
Nailer, Doig 12 tr. closed back, $350
Planer, Heavy, 25 x 6 sgl., $250
Planers and matchers, 3 side, 18 to 24 in., $175 up
Ripsaw, Belsaw light gang, BB, $175
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Yates-American No. 213 Direct Motor Driven Glue Jointer
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24" Yates-American No. 1 Jointer

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Yates-American 30" No. 177 Direct Motor Driven Ball Bearing Single Planer
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Mattison No. 124 Automatic Stroke Sander
2—Wysong & Miles No. 289 Edge Sanders

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American 40" No. 4 Band Resaw

CUT-OFF SAWS

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Onsrud WA-85 Automatic Shaper

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Wilkins-Challoner No. 70 Elec. Double End Tenoner
3—Jenkins No. 95 Electric Double End Tenoners

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Francis 84x36" Hydraulic Veneer Press, M.D.
Merritt 13 Plate Redrier, 60 by 36
2—Williams & White 10 opening, 50 x 38 Hot Plate Presses

MISCELLANEOUS

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Wardwell Saw Filer
Morgan 7-track Open Back Nailer with Clincher
3—Leitelt Lumber Lifts
Diehl No. 77 Waterfall Grooving Machine

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Lancaster No. 1010 B Air-chair clamp
Palmer 8½-ft. 16-section wheel type clamp carrier, six 30-in. clamps per section.
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New No. 300 Francis flat plate edge gluer.
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Union 54 and 60-in. double roll glue spreader, rubber roll.

GRINDERS

Diehl No. 68 cutterhead grinder.
Diehl No. 62 cutterhead grinder.

JOINTERS

Porter 30-in. jointer with Jackson & Church 4-post feeder.
Jenkins 6 and 8-ft. saw type veneer jointers.
Diehl No. 69 veneer jointer.
Diehl No. 60 glue jointer.

LATHES

No. 57-D Mattison 42-in. automatic turning.

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No. 67 Whitney oscillating.
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Hermance 8-in., belt-drive.
Vonnegut 6-in. & 8-in. ball-bearing, direct motor-drive.
Woods No. 137M 6-in. ball-bearing electric motors.

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No. 32 Whitney 24-in. single cabinet.
No. 24 Whitney 30-in. double.
No. 33 Whitney 32-in. double and 50" double
Buss No. 44, 36-in. single.
No. 120 Greenlee 40-in. double.
Oliver No. 170 Straitoplane.

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Francis 36 x 72-in. hydraulic cold press.
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Onsrud 240 2-speed sliding spindle.

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No. 137 Mattison moulding.
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No. 404A Smith 31-in. 3-drum, ball-bearing, direct motor-drive.
Solem 43-in., ball-bearing, direct motor-dr.

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Bell No. 12 double miter.
Whitney No. 61 miter saw.
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Diehl No. 75 chain-feed glue joint.
No. 207 Mattison chain-feed.
Diehl No. 55 chain-feed glue joint.
Hermance No. 300 G gang rip.

SHAPERS

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Onsrud Type W-125 automatic.
Whitney 139 DMD 2 Spindle
Porter No. 200 single.
Whitney No. 299 automatic single-spindle.

TENONERS

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Greenlee Saw Type

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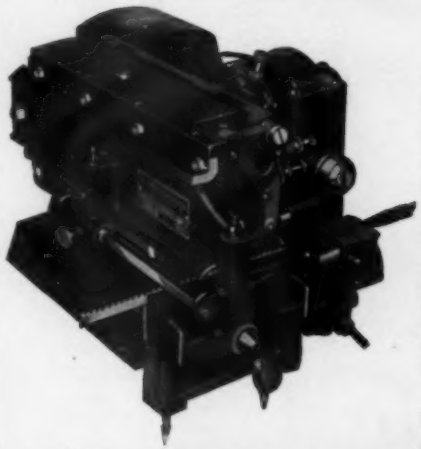

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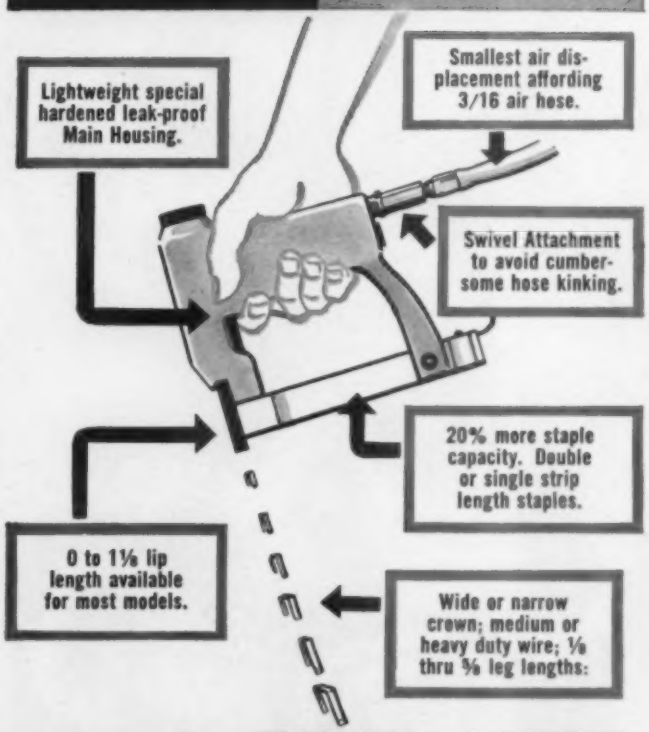
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INDEX TO PRODUCTS ADVERTISED IN THIS ISSUE

A

Abrasives, 47, 51
Adhesives, casein, 68
Adhesives, resin, 17, 31, 68, 73
Adhesives, vegetable, 68
Air Cylinders, 2
Arbors, motor, 6

B

Balancing Equipment, 87
Bending Machines, 90
Bits, machinery, 92, 105
Blowers, 112
Boring Machines, 1, 90, 97

C

Carbide cutting tools, 80-81, 86, 106
Clamping Machines, 8
Clamps, 95, 110, 112
Construction Reports, 89
Conveyors, 44
Copying Machine, 119
Cutter Heads, 61, 80-81, 100, 115, 118
Cylinders, air, 2

D

Dimension Stock, 73, 104, 108, 109
Doors, cabinet, 77
Drawer Slides, 116
Drilling Attachments, 112
Drill Heads, 112
Drills, 118
Dry Kilns, 15
Dust Control Systems, 112, 117

F

Fastener Driving Equipment, 16, 111
Fasteners, 77, 114
Feeds, 119
Ferrules, 99
Fillers, 58
Finger Jointing Machines, 9, 93
Finishes, 58
Finishing Systems, 44
Furniture Glides, 11, 99
Furniture Hardware, 99

G

Glue Mixers, 7
Glue Room Equipment, 7
Glue Spreaders, 7
Grinders, knife, 84
Guide Line Lights, 76

H

Hand Screws, 110, 112
Hanger Bolt Driver, 117
High Frequency Bonding Equipment, 43, 82, 85
Hogs, 105, 111
Humidifying Equipment, 91

J

Jointers, 113, 121

K

Knives, 115
Knives, carbide, 106

L

Lacquer, 58
Lathes, back knife, 32, 102
Lumber, 73, 76
Lumber Lifts, 60

M

Matchers, 12, 36, 92, 100
Moisture Meters, 54
Molders, 36, 61, 100, Inside Back Cover
Mortise Chains, 110
Mortisers, 113

N

Nailing Machines, 108

P

Particle Board, 19
Planers, 12, 21, 32, 36, 57, 77, 92, 113, 116, 121, Inside Back Cover
Plywood 62, 72-73
Presses, plywood, Inside Front Cover, 67
Portable Electric Tools, 54, 98

R

Resaws, 100
Routers, stair, 107

S

Sanders, block, 55
Sanders, edge, 55, 60
Sanders, endless bed, 58
Sanders, portable, 54, 98
Sash Coper, 94
Sash Pinners, 8
Saw Blades, carbide, 86
Saw Blades, circular, 86
Saw Gauges, 94, 118
Saw Sharpening & Setting Machines, 43, 110, 127
Saw Tips, 119
Saws, band, 95, 111, 121
Saws, cutoff, 3, 13, 22, 103
Saws, mitre, 58
Saws, panel, 66, 94
Saws, radial, 13
Saws, rip, 94, 95, 109
Saws, tilting arbor, 4, 96, 116
Screws, 78, 99, 114
Screwdrivers, 111
Shapers, 32, 96, 116, 121
Sharpener, blades, 118
Spray Painting Equipment, 49, 52, 59
Staplers, 111, 127, 128
Steel Strapping, 88
Surfacers, 32, 100, 113

T

Table Equipment, 18
Table Slides, 18
Tackers, 127, 128
Tenoners, 77, 116

V

Veneer, 73, 76, 77
Veneer Dryers, 15

W

Wood Working Machinery, all kinds, 20

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Index to Advertisers in the July Issue

TO OBTAIN INFORMATION FROM ANY OF THESE ADVERTISERS, FIND THE BOLDFACE KEY NUMBER *PRECEDING* THE ADVERTISER'S NAME . . . AND CIRCLE THAT NUMBER ON ACTION CARD AT RIGHT

A

201—AAA Saw & Tool Service & Supply Company 122, 123
202—Acme Steel Company 88
203—Adjustable Clamp Company 95
204—American Cynamid Company 75
205—American Machinery Exchange 123
206—Amos-Thompson Corporation 76
207—Anderson Products Company 108
208—Andover Wood Products Inc. 124
209—Armstrong Machine Works 91
210—Atkins Industries 125
211—Atlas Plywood Corporation 122

B

212—Beach Manufacturing Company 96
213—Bede Products Company 49
214—Behr Machinery & Equipment Corp. (Gaynes Engrg. Co.) 125
215—Bell Machine Company 85
216—Bellows Company, The 2
217—Berthelsen Engineering Works Inc. ..... 2nd Cover
218—Beverly Manufacturing Company 58
219—Binks Manufacturing Company 59
220—Birds Eye Veneer Company 77
221—Black Brothers Company, Inc. 7
222—Botwinik Brothers Incorporated 123
223—Bowen Millwork & Furniture Company 109
224—Buss Machine Works ..... 3rd Cover

C

225—Carr Fastener Company (Division United-Carr Fastener Corp.) 11
226—Carter Products Company, Inc. 76
227—Chase, H. 122
228—Click, Mrs. A. Graham (Veneer Tables) 73
229—Commander Manufacturing Company 112
230—Consolidated Machinery & Supply Company, Ltd. 13, 94
231—Cope, John 123
232—Crown Zellerbach Corporation 62

D

233—DeBurgh Conveyors 44
234—Delta Power Tool Division (Rockwell Manufacturing Company) 21
235—DeVilbiss Company, The 52
236—DeWalt, Incorporated 103
237—Disston Division, Henry (H. K. Porter Company, Inc.) 61
238—Dodge Corporation, F. W. 89
239—Doig Incorporated, William S. 108
240—Douglas Fir Plywood Association 72, 73
241—Duo-Fast (Fastener Corporation) 111

E

242—Ekstrom, Carlson & Company 109
243—Enterprise Company, The 116

F

244—Fader & Company, A. L. 124
245—Fastener Corporation (Duo-Fast) 111
246—Fay & Egan Company, J. A. 36, 122
247—Field Company, William H. 110
248—Foley Manufacturing Company 43
249—Forest City Bit & Tool Company 92
250—Foster Supplies Company 118

G

251—Gaynes Engineering Company 94, 125
252—General Electric Company (Metallurgical Products Department) 106
253—Goodspeed Machine Company 102
254—Graycon Tools Incorporated 118
255—Greenlee Brothers & Company 93
256—Greenlee Tool Company 105
257—Gruendler Crusher & Pulverizer Company 111
258—Gusfre, Karl 123

H

259—Hanchett Manufacturing Company 84
260—Handy Manufacturing Company 8
261—Hardware Importers Inc. 116
262—Hartford Clamp Company, The 110
263—Harrington Incorporated, S. W. 122
264—Harris Machinery Company 123
265—Haskew & Company, Inc., R. K. 123
266—Heinemann Saw Corporation 86
267—Hickory Hill Manufacturing Company 122
268—High Standard Manufacturing Company 118
269—Holtson Machinery Company 127
270—Hotel Knickerbocker 98

J

271—Jamestown Veneer & Plywood Corporation 77

K

272—Kenner, L. R. 122
273—King Manufacturing Company 119
274—Kirk & Blum Mfg. Company 117

L

275—Land Incorporated, L. J. 123
276—Leitelt Iron Works 60
277—Lodge & Shipley Company 67

M

278—Marcoloy, Incorporated 80, 81
279—Mattison Machine Works ..... 4th Cover
280—McDonald Machinery Company 124
281—Mereen-Johnson Machine Company 22
282—Metal Carbides Corporation 119
283—Metallurgical Products Department (General Electric Company) 106
284—Meyer & Sons, Incorporated, Wm. W. 112
285—Michigan Abrasives Company 51
286—Miller, J. William 123
287—Minnesota Mining & Manufacturing Co. 47
288—Moak Machine & Tool Company 121
289—Moisture Register Company 54
290—Monical Machinery Company 126
291—Moore Dry Kiln Company 15
292—Morgan Manufacturing Company 104

N

293—National Air Sander, Incorporated 54
294—National Lock Company 114
295—National Starch Products, Incorporated 17, 19
296—Newman Machine Company, Inc. 12
297—Northern Hardwood Veneers, Inc. 73
298—Northfield Foundry & Machine Company 113

O

299—Oakley Company, The 60
300—Oliver Machinery Company 1

P

301—Packing Material Company 122
302—Parks Woodworking Machine Company 113
303—Pearson Sanding Machine Company 55
304—Perkins Glue Company 68
305—Pootatuck Corporation 58
306—Porter-Cable Machine Company 98
307—Porter Company, H. K. (Henry Disston Division) 61
308—Porter Machinery Company, C. O. 3
309—Powermatic Machine Company 77
310—Precisionware, Incorporated 123

R

311—Randolph Products Company 58
312—Reichhold Chemicals Incorporated 31
313—Richardson Company, J. S. 90
314—Riebling Company, Eric. 123
315—Rockwell Manufacturing Company (Delta Power Tool Division) 21
316—Root Company, B. M. 97, 124

S

317—Saranac Machine Company 16
318—Saw & Knife Specialty Company, Inc. 111
319—Senco Products Company 127
320—Smithway Machine Company 95
321—Solem Machine Company 57
322—Southern Screw Company 78
323—Southington Hardware Manufacturing Co. 99
324—Spotnails, Incorporated 128
325—Stanley Works 111
326—Stem Incorporated, Chester B. 123
327—Stewart-Warner Corporation 87
328—Supreme Woodworking Machine Company 107
329—Sutton Woodworking Machine Company 126

T

330—Tannewitz Works 4, 118
331—Taylor Manufacturing Company, James L. 112
332—Thayer Company, W. W. 123
333—Titan Tool Company 117
334—Tri-State Machinery Company 9, 125
335—Ty-Sa-Man Machine Company 66

U

336—Union Tool Company 82
337—United-Carr Fastener Corporation (Carr Fastener Co., Div.) 11

V

338—Vance Company, J. A. 92

W

339—Walter & Company, Inc., B. 18
340—Wardwell Manufacturing Company 127
341—Weyerhaeuser Industrial Wood Parts 123
342—Whitney & Son, Inc., Baxter D. 32
343—Wiegand Corporation, Henry 119
344—Wilco Machine Works, Inc. 122
345—Williams Patent Crusher & Pulverizer Company 105
346—Winzeler Stamping Company 99
347—Wisconsin Knife Works 115
348—Woods Machine Company, S. A. 6, 83
349—Woodward Machinery Company 122
350—Woodworkers' Tool Works, Inc. 58, 94
351—Woodworkers' Supply Company 123
352—Woodworking Machinery Manufacturers Association 20
353—Workrite Products Company 43

Y

354—Yates-American Machine Company 100

Z

355—Zeiller & Nagel, Incorporated 110

Handy Information Cards

THE three postpaid post cards at the right are provided to aid you in obtaining information about products advertised in this issue of WOOD WORKING DIGEST. The top two cards offer you a way to get information about any product listed. The bottom Action Card provides key numbers for you to circle to get information about any new product item, free literature item or advertisement published in this issue. New product and literature items are numbered where they appear. For information about any advertisement, simply find the manufacturer's name in the Advertisers Index above, note the boldface number preceding the name and circle that number on the Action card.

You are invited to use these

POSTAGE-FREE ACTION CARDS

PRODUCT INFORMATION

A quick, free way to obtain information about the equipment and supplies you need to buy.

- Abrasive Reserving
- Abrasive Compound
- Adhesives (Specify Kind)
- Air Conditioning Systems
- Arbors, Motor
- Arbors, Saw
- Bags, Paper
- Band Saw Accessories
- Band Saw Tires & Wheels
- Barriers
- Bits (Specify Kind)
- Blankets, paper
- Blowers & Fan Systems
- Bolt Drivers
- Bolts
- Booths, spray
- Boxes (Specify Kind)
- Boring Tools
- Brazing Equipment
- Brushes
- Casters
- Chain Carriers
- Clamping Fixtures
- Clasps
- Clamps & Jigs
- Cleaners, booth
- Clippers, veneer
- Compressors, air
- Cutoff Tools
- Cutter Blanks
- Cutter Heads
- Cutters (Specify Kind)
- Cylinders, air
- Cylinders, hydraulic
- Dado Heads
- Dimension Stock
- Dowels
- Drawer Equipment
- Driers, furniture
- Driers, veneer
- Drill Attachments
- Drill Heads
- Drills, electric
- Drills, multiple spindle
- Dry Kilns
- Dry Kiln Control Devices
- Dust Control Equip.
- Edge Banding Equip.
- Edges, lumber
- End Matchers
- Fasteners; corrugated
- Joint
- Special
- Threaded, insert
- Fastener Drives
- Equip.
- Filing Room Equip.
- Finishes
- Flexible Shaft Equip.
- Furniture & Chair Parts
- Gauges, saw
- Generators
- Glues, electronic
- Glues, veneer Machines
- Grinders, edge
- Grinders
- Guards, machine
- Guide Lights
- Guides, saw
- Guns, glue
- Guns, spray
- Hardboard
- Hardware
- Heaters, glue
- Heaters, paint
- High Frequency Electronic Bonding Equip.
- Hogs
- Humidifying Equip.
- Jointers
- Jointers, veneer
- Knives (Specify Kind)
- Lacquer
- Lathes
- Lumber, hardwood
- Lumber, imported
- Lumber, softwood
- Machines, banding
- Machines, barrel & basket & hamper
- Machines, bed pad binding
- Machines, bending
- Machines, box & crate
- Machines, box printing
- Machines, carving
- Machines, chair
- Machines, checking
- Machines, clamping
- Machines, cleat
- Machines, coating
- Machines, cooperage
- Machines, corner block
- Machines, dado
- Machines, door & sash
- Machines, dovetailing
- Machines, edge banding
- Machines, edge gluing
- Machines, end
- Machines, fastening
- Machines, finger jointing
- Machines, gang rip
- Machines, glue & bore
- Machines, grooving
- Machines, saddle seat
- Machines, saw setting
- Machines, sawing
- Machines, scraping
- Machines, stapling
- Machines, stool
- Machines, strapping
- Machines, veneer cutting
- Machines, veneer taping
- Matcher Heads
- Meters
- Meters, lumber
- Meters, moisture
- Meters, glue
- Meters, paint
- Molders
- Molder Blanks
- Molder Heads
- Moldings, wood
- Mortise Chains
- Mortisers
- Motors
- Nail head combination
- Nail pullers
- Nail pullers, automatic
- Nails
- Nails, anchor
- Paint
- Pallets
- Patchers, panel
- Patchers, veneer
- Planers
- Plastic Sheets
- Plywood
- Plywood, flexible
- Plywood, imprinted
- Plywood, metal faced
- Plywood, molded plastic faced
- Plywood Novelties
- Polishers
- Portable electric Tools
- Pulp, glue
- Presses, bending
- Presses, chipboard
- Presses, edge banding
- Presses, laboratory
- Presses, lumber
- Presses, panel to frame
- Presses, plywood
- Presses, veneer
- Putty
- Reamers, hand
- Reels, blind
- Routers
- Rubbing Compounds
- Safety Clothing
- Safety Equipment
- Sander Heads
- Sanders (Specify Kind)
- Sandpaper
- Saw Blades & Tables
- Saw Blades (Specify Kind)
- Sawing Machinery: arbor
- bandsaw
- circular
- Screwdrivers, electric
- Servers
- Shaper Collars
- Shaper Heads
- Shaper Stock
- Shapers
- Sharpeners, chain
- Sharpeners, knife
- Sharpeners, saw
- Spreaders, glue
- Stackers, lumber
- Stains
- Staples
- Steel Strapping
- Stickers
- Strapping Tools
- Surfacers
- Table Equipment
- Takers
- Tape, gummed
- Veneers
- Trucks, dry kiln
- Trucks, factory
- Veneer
- Wood Preservatives

Date will come direct to you from responsible manufacturers.
Your request involves no obligation.

Name ..... Position.....

Company .....

Street .....

City ..... Zone..... State.....

PRODUCT INFORMATION

A quick, free way to obtain information about the equipment and supplies you need to buy.

Date will come direct to you from responsible manufacturers.
Your request involves no obligation.

Name ..... Position.....

Company .....

Street .....

City ..... Zone..... State.....

July, 1957 — **For free information . . . use these postage-free Action Cards**

Free Literature and New Products — circle key numbers

1	11	21	31	41	51	61	71	81	91	101	111	121	131	141
2	12	22	32	42	52	62	72	82	92	102	112	122	132	142
3	13	23	33	43	53	63	73	83	93	103	113	123	133	143
4	14	24	34	44	54	64	74	84	94	104	114	124	134	144
5	15	25	35	45	55	65	75	85	95	105	115	125	135	145
6	16	26	36	46	56	66	76	86	96	106	116	126	136	146
7	17	27	37	47	57	67	77	87	97	107	117	127	137	147
8	18	28	38	48	58	68	78	88	98	108	118	128	138	148
9	19	29	39	49	59	69	79	89	99	109	119	129	139	149
10	20	30	40	50	60	70	80	90	100	110	120	130	140	150

Advertisements (See Ad Index at left for boldface key number to circle)

01	213	225	237	249	261	273	285	297	309	321	333	345	357	369
02	214	226	238	250	262	274	286	298	310	322	334	346	358	370
03	215	227	229	251	263	275	287	299	311	323	335	347	359	371
04	216	228	240	252	264	276	288	300	312	324	336	348	360	372
05	217	229	241	253	265	277	289	301	313	325	337	349	361	373
06	218	230	242	254	266	278	290	302	314	326	338	350	362	374
07	219	231	243	255	267	279	291	303	315	327	339	351	363	375
08	220	232	244	256	268	280	292	304	316	328	340	352	364	376
09	221	233	245	257	269	281	293	305	317	329	341	353	365	377
10	222	234	246	258	270	282	294	306	318	330	342	354	366	378
11	223	235	247	259	271	283	295	307	319	331	343	355	367	379
12	224	236	248	260	272	284	296	308	320	332	344	356	368	380

Inside Front Cover — Inside Back Cover — Back Cover

Inserts: 1A 1B 1C 1D 2A 2B 2C 2D 3A 3B 3C 3D

Company .....

Name..... Position.....

Street .....

City..... Zone..... State.....

You are invited to use these

POSTAGE-FREE ACTION CARDS

FIRST CLASS
PERMIT NO. 272
WHEATON, ILLINOIS

BUSINESS REPLY CARD
NO POSTAGE NECESSARY IF MAILED IN THE U.S.A.

3c POSTAGE WILL BE PAID BY

Hitchcock's WOOD WORKING Digest

READERS' SERVICE DIVISION

WHEATON, ILLINOIS

FIRST CLASS
PERMIT NO. 272
WHEATON, ILLINOIS

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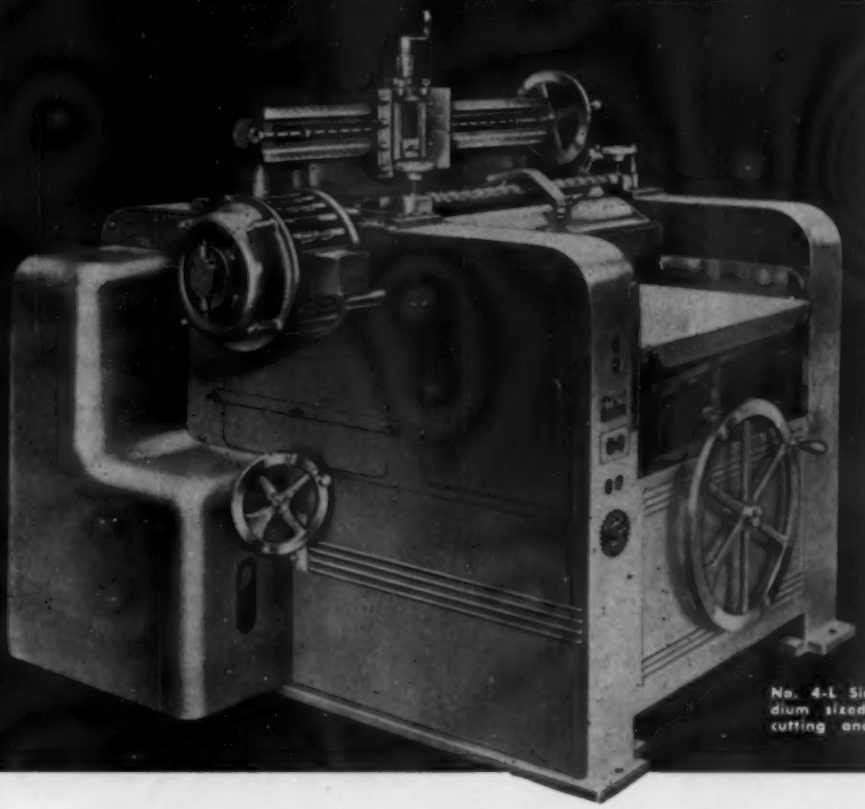
3c POSTAGE WILL BE PAID BY

Hitchcock's WOOD WORKING Digest

READERS' SERVICE DIVISION

WHEATON, ILLINOIS

It's Much More Economical to Own MODERN BUSS CABINET PLANERS than To Do Without Them!



No. 4-L Single Surface, Medium sized planer for first cutting and finishing work.

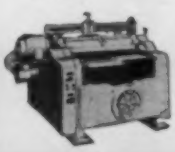
Unless yours is a modern, up-to-the-minute planer, a current BUSS Cabinet Surface Planer in your shop would quickly demonstrate savings which would repay its cost many times over in a relatively short period of time. In the first place it would give you planing of finest quality at three or four times the speed of older planers . . . and that means vastly increased production plus the savings in clean-up operations that quality planing effects. Secondly, you would find that set-up and change-over time would be cut 60 to 70% by our exclusive semi-automatic controls which make absolutely accurate adjustments a matter of seconds instead of long and tedious operations of varying accuracy. Third, you would find that knife grinding and jointing is reduced to a small fraction of the time required on the older planers. And yet, these are only some of the features that make it much cheaper to own modern BUSS Planers than to do without them. Why not investigate? Write for bulletins, now!

THERE'S A BUSS PLANER TO EXACTLY SUIT YOUR NEEDS

6 MODELS
29 SIZES

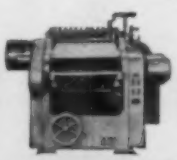
No. 44 Single Surface, 4 roll planer for first cutting and finishing work.

No. 66 Single Surface, 6 roll planer for first cutting and finishing work.



No. 88 Double Surface, 8 roll planer for first cutting and finishing work.

No. 55 Heavy duty Double Surfacer for planing rough lumber.



MICRO-SURFACER for planing hardboard and other very thin materials.

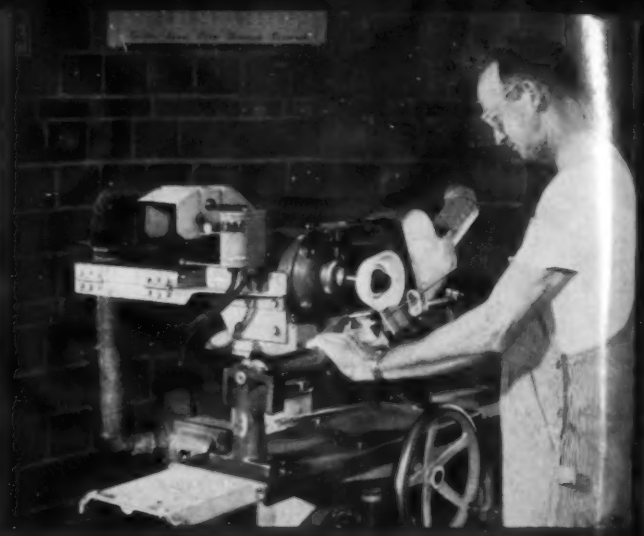
BUSS
SINCE 1862
MACHINE WORKS

PLANER SPECIALISTS EXCLUSIVELY

234 EIGHTH STREET • HOLLAND, MICHIGAN

"Micrometer-perfect" door parts produced 4-at-a-pass by Mattison Moulders

AT ROLSCREEN COMPANY



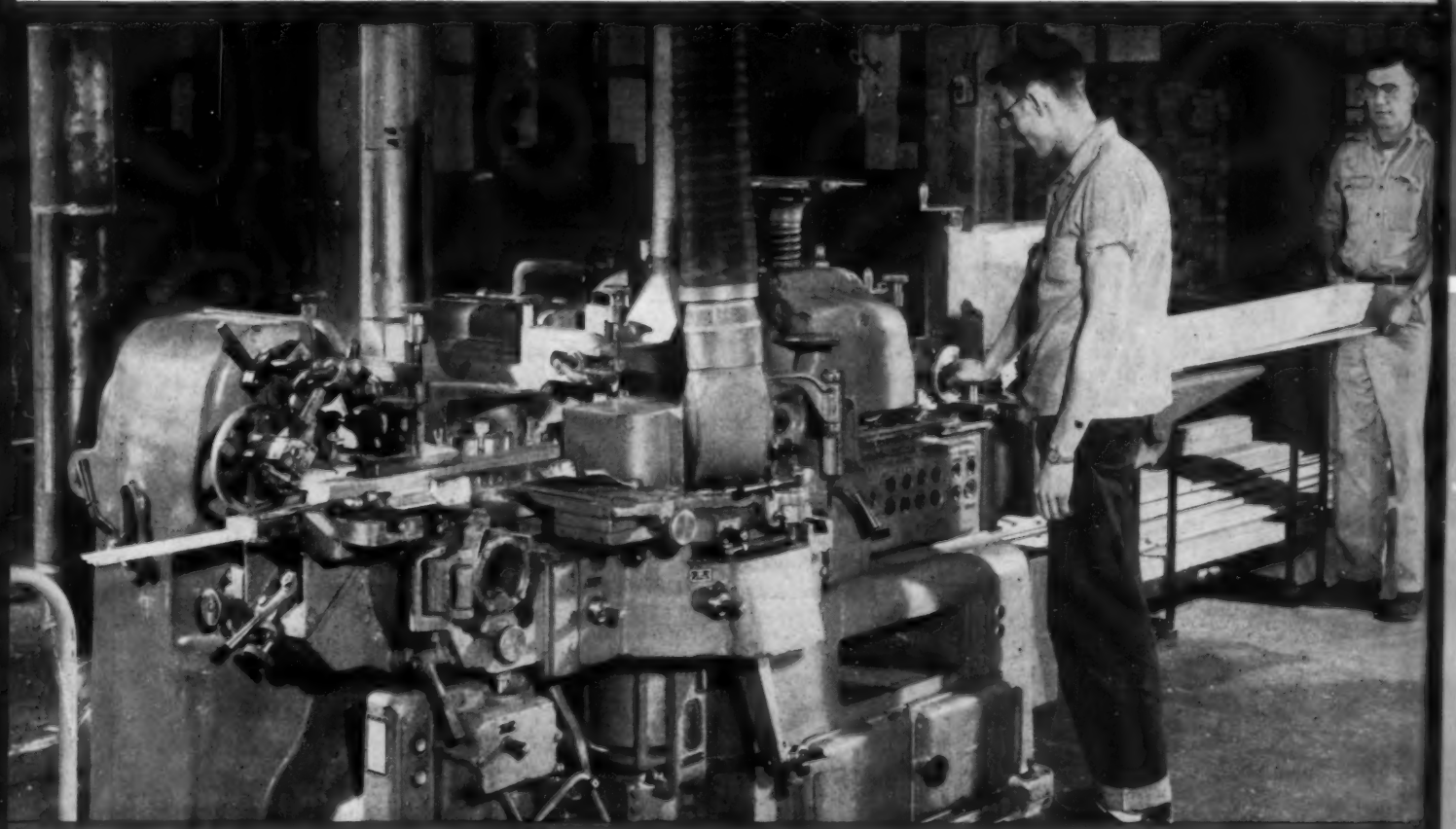
The outstanding success of Rolscreen Company, Pella, Iowa, was the subject of a major article in a national woodworking magazine recently. "We have standardized on the Mattison No. 276 Moulder because the rigid, close-coupled design helps us hold tolerances we gauge with micrometers and dial indicators," says H. S. Kuyper of Rolscreen. The company's popular "Pella" prefabricated windows and wood folding doors require precision manufacture, yet high-speed production.

"One of a number of operations for which we use these soundly designed machines is the manufacture of multiple small mouldings—formed cutters are used to make several mouldings from one piece of material in a single pass through the machine. Production is increased corresponding to the multiple number of pieces obtained per cut."

Another profit-building advantage important in the Rolscreen plant, which covers a city square and operates around the clock, is the low downtime record of their numerous Mattison machines.

"Maintenance is very low, and when we need parts, your service department makes fast stock shipments in most cases," says Mr. Kuyper.

The experience of successful companies like Rolscreen suggests a practical next step in building your own products' success story: call your Mattison dealer *today* and discuss ways to improve production methods, using standard Mattison woodworking machines!



Mattison Machine Works, Rockford, Illinois

Gentlemen: Please send bulletin on Model 276 Moulder ☐ and information on Model 231 Pedestal Grinder (shown at top of ad) ☐

Name _____

Firm _____

Address _____

City _____ Zone ____ State _____

MATTISON
MACHINE WORKS
ROCKFORD ILL. U.S.A.

MATTISON

WOODWORKING MACHINERY

"Built better . . . to produce better quality"